SONY

3-864-274-11 (1)

Digital Video Camera Recorder

Operating Instructions

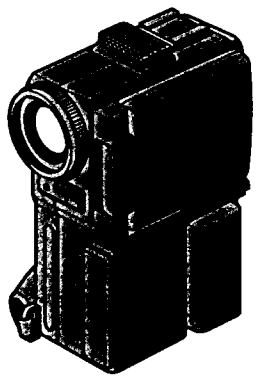
Before operating the unit, please read this manual thoroughly, and retain it for future reference.

Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. **DCR-PC1** _____ Model No. **AC-VF10** _____

Serial No. _____ Serial No. _____



Mini DV Digital Video Cassette

Handycam Vision™

CM Cassette Memory

DCR-PC1

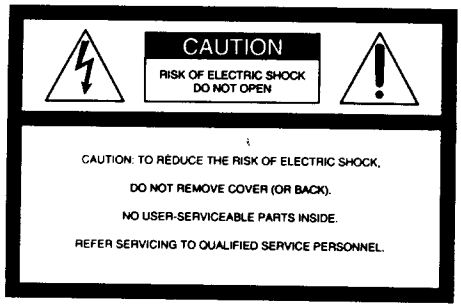
©1998 by Sony Corporation

Welcome!

Congratulations on your purchase of this Sony Handycam Vision™ camcorder. With your Handycam Vision, you can capture life's precious moments with superior picture and sound quality. Your Handycam Vision is loaded with advanced features, but at the same time it is very easy to use. You will soon be producing home video that you can enjoy for years to come.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.





This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For the customers in the United States and Canada

DISPOSAL OF LITHIUM ION BATTERY.

LITHIUM ION BATTERY. DISPOSE OF PROPERLY.

You can return your unwanted lithium ion batteries to your nearest Sony Service Center or Factory Service Center.

Note: In some areas the disposal of lithium ion batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you call 1-800-222-SONY (United States only)

For the Sony Factory Service Center nearest you call 416-499-SONY (Canada only)

Caution: Do not handle damaged or leaking lithium ion battery.

For the customers in the U.S.A.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— Reorient or relocate the receiving antenna.

— Increase the separation between the equipment and receiver.

— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

— Consult the dealer or an experienced radio/TV technician for help.

For the customers in CANADA

CAUTION

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

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Before you begin

Using this manual

As you read through this manual, buttons and settings on the camcorder are shown in capital letters.

e.g., Set the POWER switch to CAMERA.

Note on Cassette Memory

This camcorder is based on the DV format. You can only use mini DV cassettes with this camcorder. We recommend you to use a tape with cassette memory **CM**.

The functions which depend on whether the tape has the cassette memory or not are:

- End Search (p. 23)
- Date Search (p. 59)
- Photo Search (p. 62)

The functions you can operate only with the cassette memory are:

- Superimposing a title (p. 50)
- Making a custom title (p. 53)
- Labeling a cassette (p. 55)
- Title Search (p. 61)

For details, see page 72.

Note on TV color systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

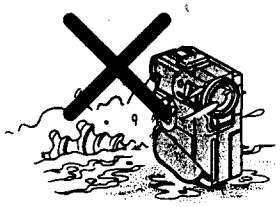
Precaution on copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

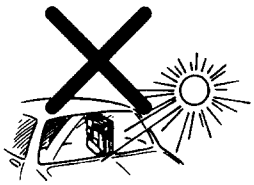
Precautions on camcorder care

- **The LCD screen and/or the color viewfinder are manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue or green in color) that constantly appear on the LCD screen and/or in the viewfinder. These points are normal in the manufacturing process and do not affect the recorded picture in any way. Over 99.99% are operational for effective use.**
- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction, and sometimes this malfunction cannot be repaired **[a]**.
- Never leave the camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight **[b]**.

[a]



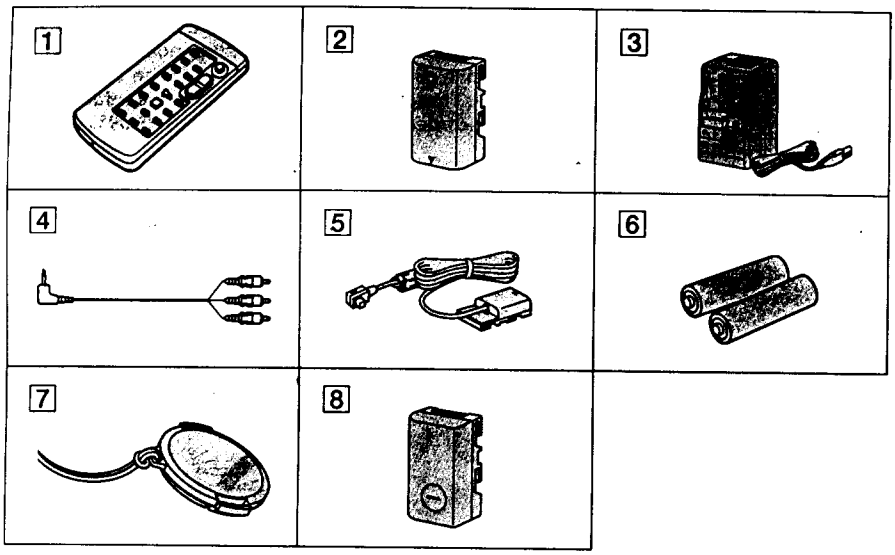
[b]



Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

Checking supplied accessories

Check that the following accessories are supplied with your camcorder.



1 **Wireless Remote Commander** (1) (p. 98)

2 **NP-F10 battery pack** (1) (p. 7)

3 **AC-VF10 AC power adaptor** (1) (p. 7, 24)
The shape of the plug varies from region to region.

4 **A/V connecting cable** (1) (p. 31, 57, 68)

5 **DK-115 connecting cord** (1) (p. 24)

6 **Size AA (R6) battery for Remote Commander** (2) (p. 99)

7 **Lens cap** (1) (p. 11)
This lens cap is already set on your camcorder.

8 **Battery terminal cover** (1) (p. 9)

Charging and installing the battery pack

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC power adaptor.
This camcorder operates only with the "InfoLITHIUM" battery pack (S series).

"InfoLITHIUM" is a trademark of Sony Corporation.

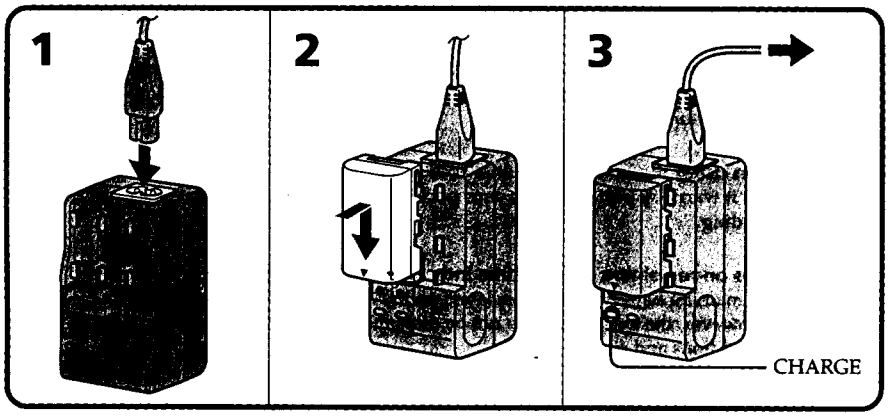
Charging the battery pack

(1) Connect the power cord to the AC power adaptor.

(2) Align the hooks of the battery pack with the AC power adaptor. Then fit the battery pack in the direction of the arrow.

(3) Connect the power cord to a wall outlet. The CHARGE lamp (orange) lights up. Charging begins.

When the CHARGE lamp goes out, **normal charge** is completed. For **full charge**, which allows you to use the battery longer than usual, leave the battery pack in place for approximately one hour after the CHARGE lamp goes out. Unplug the unit from the wall outlet, then remove the battery pack and install it into the camcorder. You can also use the battery pack before it is completely charged.



Charging time

Battery pack	Charging time *
NP-F10 (supplied)	145 (85)
NP-F20	220 (160)
NP-F30	295 (235)

The time required for a normal charge is indicated in parentheses.
Only the battery packs listed above can be used with this camcorder.

* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor. (Lower temperatures require a longer charging time.)

Charging and installing the battery pack

Battery life

Upper numbers are the time when recording with the viewfinder. Lower numbers are the time when recording with the LCD screen. Using both will further reduce recording time.

Battery pack	Continuous recording time **	Typical recording time ***	Playing time with LCD
NP-F10 (supplied)	55 (50) 35 (30)	30 (25) 20 (15)	40 (35)
NP-F20	115 (105) 75 (70)	60 (55) 40 (35)	80 (75)
NP-F30	170 (155) 120 (105)	85 (75) 65 (60)	125 (110)

Numbers in parentheses indicate the time when you use a normally charged battery. Battery life will be shorter if you use the camcorder in a cold environment.

** Approximate continuous recording time at 77°F (25°C).

*** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

About NP-F10

The battery life will be shorter when you carry out recording in a cold place or with the LCD panel open. We recommend that you use the NP-F20/F30 large capacity battery pack (not supplied).

When using the battery pack in a cold place

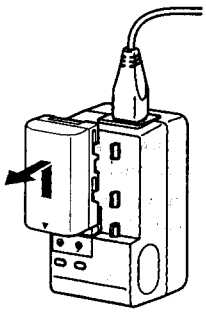
Keep it warm by putting it into your pocket and install it in the camcorder just before recording.

Notes on remaining battery time indication during recording

- Remaining battery time is displayed on the LCD screen or in the viewfinder. However, the indication may not be displayed properly, depending on using conditions and circumstances.
- When you close the LCD panel and open it again, it takes about 1 minute for the correct remaining time to be displayed.

To remove the battery pack

Slide the battery pack in the direction of the arrow.



Charging and installing the battery pack

Notes on charging the battery pack

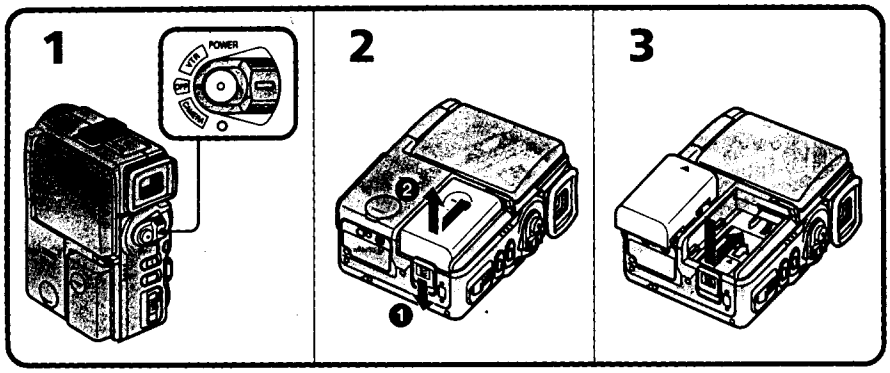
- The CHARGE lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the CHARGE lamp does not light, disconnect the power cord. After about one minute, reconnect the power cord again.
- When a fully charged battery pack is installed, the CHARGE lamp will light once, then go out.

Installing the battery pack

(1) Set the POWER switch to OFF to prevent misoperation of the camcorder.

(2) While sliding BATT RELEASE in the direction of the arrow ❶, slide the battery terminal cover in the direction of the arrow ❷.

(3) Insert the battery pack in the direction of the arrow.



To remove the battery pack

The battery pack is removed in the same way as the battery terminal cover.

Note on battery terminal cover

To protect the battery terminals, install the battery terminal cover after the battery pack is removed.

You can look at the demonstration of the functions available with this camcorder (p. 28).

Inserting a cassette

You can use mini DV cassette with Mini DV logo* only.
Make sure that the power source is installed.

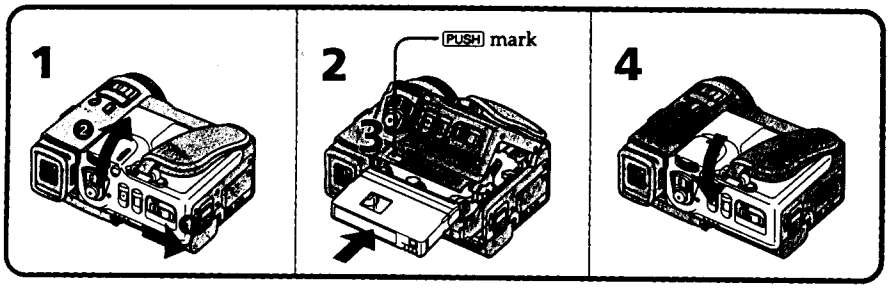
(1) Slide ⏏ OPEN/EJECT in the direction of the arrow ❶ and open the lid in the direction of the arrow ❷. The cassette compartment automatically lifts up and opens.

(2) Push the middle portion of the back of the tape to insert a cassette. Insert the cassette in a straight line deeply into the cassette compartment with the window facing out.

(3) Close the cassette compartment by pressing the PUSH mark on the cassette compartment. The cassette compartment automatically goes down.

(4) After the cassette compartment going down completely, close the lid until it clicks.

* Mini DV is a trademark.



To eject the cassette

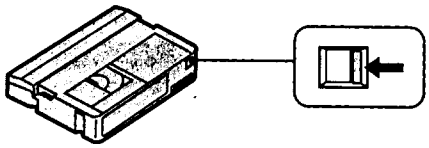
Follow the procedure above and in step 2, take out the cassette.

Notes

- Do not put forcibly the cassette into the cassette compartment. Doing so may damage the camcorder.
- When you open the lid immediately after you install the battery, the cassette compartment may not open. Close the lid and open it again.
- The cassette compartment may not be closed when you press any part of the lid other than the PUSH mark.
- Be careful not to get your fingers caught in the cassette lid.
- When you insert and eject a cassette, set the POWER switch to OFF to prevent misoperation of the camcorder.

To prevent accidental erasure

Slide and open the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the 📼 and ⏏ indicators flash on the LCD screen or in the viewfinder, and you cannot record on the tape. To re-record on this tape, slide and close the tab to cover the red mark.



Camera recording

Make sure that the power source is installed and a cassette is inserted and that the START/STOP MODE switch (p. 15) is set to . Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.
When you use the camcorder for the first time, power on it and reset the date and time to your time before you start recording (p. 74).

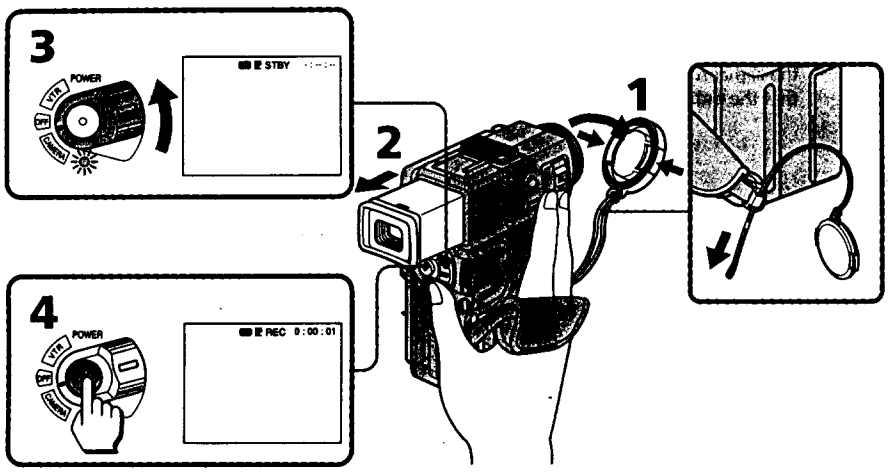
(1) Remove the lens cap and pull the lens cap string to fix it.

(2) Pull out the viewfinder until it clicks.

(3) While pressing the small green button on the POWER switch, set it to CAMERA. The power lamp under the POWER switch flashes and the camcorder is set to Standby mode.

(4) Press START/STOP.
The camcorder starts recording. The "REC" indicator appears in the viewfinder. The camera recording lamp on the front of the camcorder also lights up.

You can also select Recording mode, SP (standard play) mode or LP (long play) mode. Set REC MODE in the menu system according to the length of your planned recording before you start.



Notes on the viewfinder
When the viewfinder is not pulled out until it clicks, the picture does not appear in the viewfinder.

Camera recording

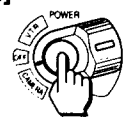
To stop recording momentarily [a]

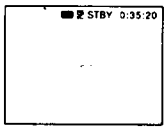
Press START/STOP. The "STBY" indicator appears in the viewfinder **(Standby mode)**.

To finish recording [b]

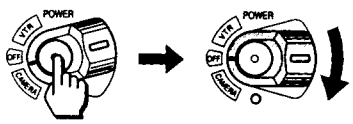
Press START/STOP again to stop recording. Set the POWER switch to OFF. Then, eject the cassette and remove the battery pack.

[a]





[b]

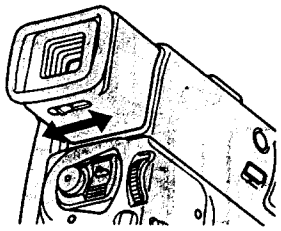


When you use mini DV cassette with cassette memory

Read the instruction about cassette memory to use this function properly (p. 72).

To focus the viewfinder lens

If you cannot see the indicators in the viewfinder clearly, or after someone else has used the camcorder, focus the viewfinder lens. Move the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus.



Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, while pressing the small green button on the POWER switch, set it to OFF once, and then to CAMERA. To start recording, press START/STOP.

Camera recording

Note on Recording mode

This camcorder records and plays back in SP (standard play) mode and in LP (long play) mode. Select SP or LP in the menu system. In LP mode, you can record 1.5 times as long as in SP mode.

Notes on LP mode

- We recommend to use this camcorder to play back a tape recorded on this camcorder. If a tape recorded on other camcorder is played back on this camcorder, or vice versa, mosaic-pattern noise may appear.
- When you record in SP and LP modes on one tape or you record some scenes in LP mode, the playback picture may be distorted or the time code may not be written properly between scenes.
- When you record in LP mode, we recommend you to use a Sony Excellence/Master mini DV cassette so that you can get the most out of your camcorder.
- You cannot make audio dubbing on a tape recorded in LP mode. Use the SP mode for the tape to be audio dubbed.

Notes on the time code

- The time code indicates the recording or playback time, "0:00:00" (hours : minutes : seconds) in CAMERA mode and "0:00:00:00" (hours : minutes : seconds : frames) in VTR mode.
- Be sure not to make a blank portion when recording, because the time code will start from "0:00:00:00" again, and you cannot rewrite the time code on the tape.
- This camcorder uses the drop frame mode.

Note on the beep sound

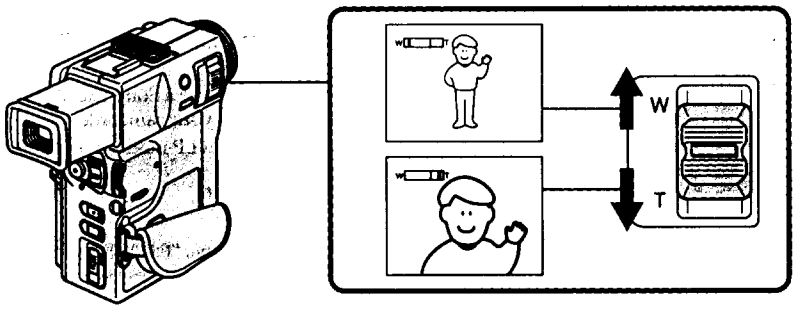
The beep sounds when you operate the camcorder. Several beeps also sound as a warning of any unusual condition of the camcorder.
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

Note on remaining tape indicator

The indicator may not be displayed accurately depending on the tape. Though the indicator does not appear at the time of recording, it will appear in a few seconds.

Using the zoom feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"**W**" side: for wide-angle (subject appears farther away)
"**T**" side: for telephoto (subject appears closer)



Zooming speed (Variable speed zooming)

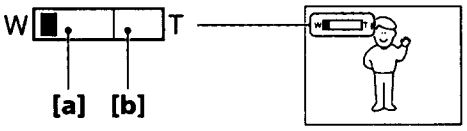
Move the power zoom lever a little for a relatively slow zoom; move it still more for a high-speed zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side of the power zoom lever until the focus is sharp. You can shoot a subject that is at least about 2 5/8 feet (about 80cm) away from the lens surface in the telephoto position, or about 1/2 inch (about 1cm) away in the wide-angle position.

Notes on digital zoom

- More than 10x zoom is performed digitally, and the picture quality deteriorates as you go toward the "T" side. If you do not want to use the digital zoom, set the D ZOOM function to OFF in the menu system.
- The right side **[b]** of the power zoom indicator shows the digital zooming zone, and the left side **[a]** shows the optical zooming zone. If you set the D ZOOM function to OFF, the **[b]** zone disappears.



Selecting the start/stop mode

Your camcorder has two modes besides normal start/stop mode. These modes enable you to take a series of quick shots resulting in a lively video.

(1) Set START/STOP MODE to the desired mode.

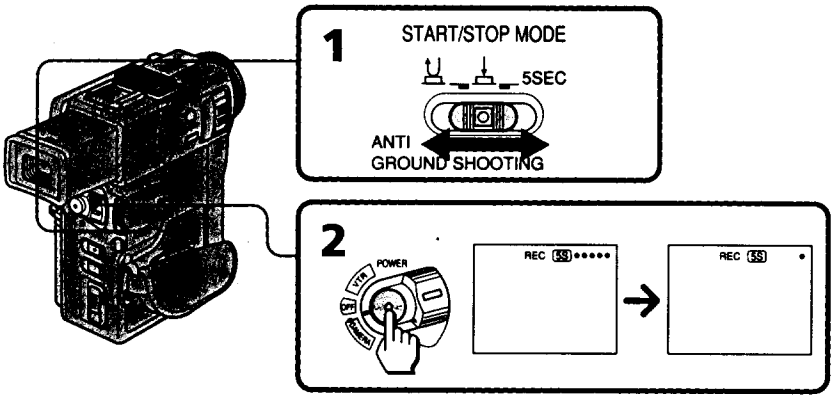
: Recording starts when you press START/STOP, and stops when you press it again (factory setting).

ANTI GROUND SHOOTING : The camcorder records only while you press down START/STOP so that you can avoid recording unnecessary scenes.

5SEC : When you press START/STOP, the camcorder records for about 5 seconds and then stops automatically.

(2) Press START/STOP. Recording starts.

If you selected **5SEC**, five dots appear in the viewfinder or on the LCD screen. The dots disappear at a rate of one per second as illustrated below. When five seconds elapse and all the dots disappear, the camcorder switches to Standby mode automatically.



To extend the recording time in 5SEC mode

Press START/STOP again before all the dots disappear. Recording continues for about 5 seconds from the moment you press START/STOP.

Notes on 5SEC recording

- When you select ANTI GROUND SHOOTING or **5SEC**, you cannot use the fade-in/fade-out function.
- When you select **5SEC**, the remaining tape indicator is not displayed.
- If you have turned off the indicators on the LCD screen, the dots do not appear.

Camera recording

Shooting with the LCD screen

You can also record the picture while looking at the LCD screen.

When using the LCD screen, the viewfinder screen turns off automatically. You cannot monitor the sound from the speaker during CAMERA mode.

(1) Press OPEN and open the LCD panel.

(2) Adjust angle of the LCD panel.

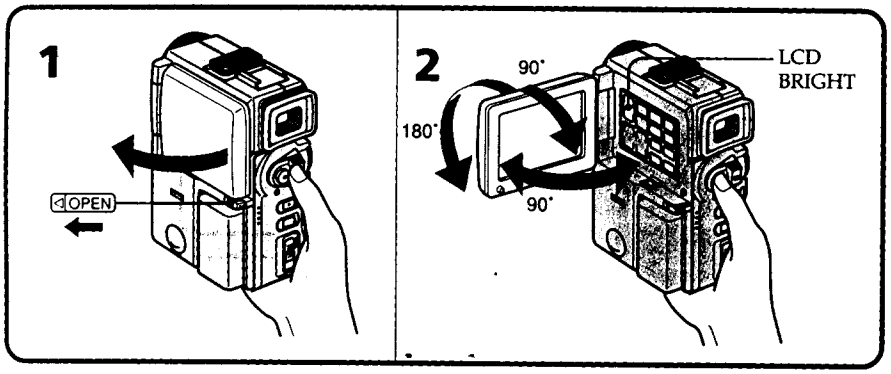
The LCD panel moves about 90 degrees to this side and about 180 degrees to the other side.

To adjust the brightness of the LCD screen, press LCD BRIGHT.

+ side: to brighten the LCD screen

– side: to dim the LCD screen

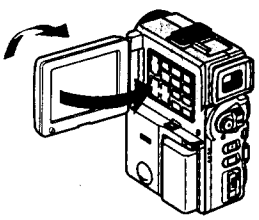
The battery life is longer when the LCD panel is closed. Use the viewfinder instead of the LCD screen to save the battery power.



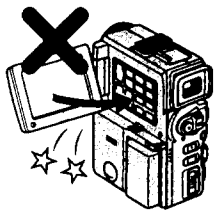
Notes on the LCD panel

- When closing the LCD panel, turn it vertically until it clicks **[a]**.
- When turning the LCD panel, turn it always vertically; otherwise, the camcorder body may be damaged or the LCD panel may not close properly **[b]**.
- Always open the LCD screen up to 90 degrees when adjusting its angle.
- Close the LCD panel completely when not in use.
- Do not push nor touch the LCD when moving the LCD panel.
- You may find it difficult to view the LCD screen due to glare when using the camcorder outdoors.

[a]



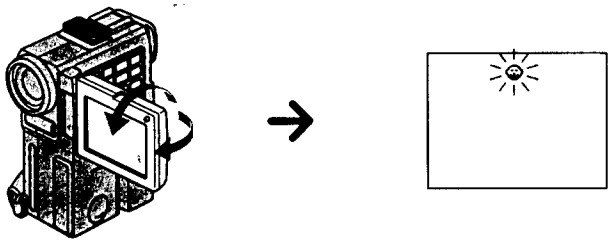
[b]



Letting the subject monitor the shot

You can turn the LCD panel over so that it faces the other way and you can let the subject monitor the shot while shooting with the viewfinder.

Turn the LCD panel vertically first until it clicks, then turn it over. The ☺ indicator appears on the LCD screen **(mirror mode)** and the time code, tape counter and remaining tape indicators disappear.
You can also use the Remote Commander.

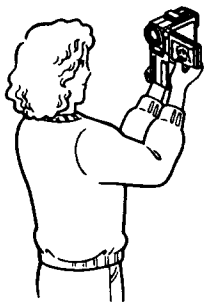


To cancel mirror mode

Turn the LCD panel back toward the camcorder body.

Notes on mirror mode

- When you turn the LCD panel 180 degrees, the camcorder enters mirror mode.
- Using the mirror mode, you can record yourself while watching yourself on the LCD screen.
- The picture on the LCD screen looks like a mirror-image while recording in mirror mode. The STBY indicator appears as **II●** and REC as **●**. Other indicators appear as mirror-image. Some indicators may not appear in mirror mode.
- While recording in mirror mode, you cannot operate the following functions: MENU, TITLE, and ZERO SET MEMORY on the Remote Commander.
- When recording in mirror mode, the picture on the LCD screen rotates right or left as if in a mirror, but the recorded picture on the tape will be the same as the actual subject.

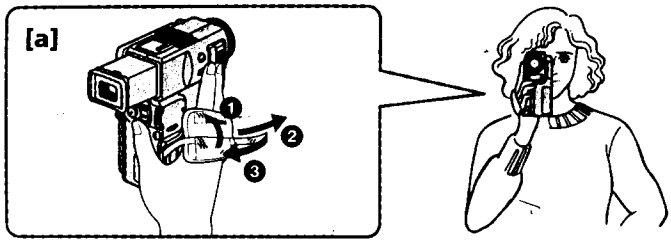


Hints for better shooting

For hand-held shots, you will get better results by holding the camcorder according to the following suggestions:

- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb. **[a]**

[a]



- Place your elbows against your side.
- Adjust the LCD panel angle.
- Keep your fingers away from the lens.
- Place your eye firmly against the viewfinder eyecup.
- Be sure not to touch the built-in microphone.
- Be sure not to touch the FOCUS button by accident.
- Use the LCD panel frame or the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Lift the LCD panel up to record from a low position. **[b]**
- You can also record in a high position. Lift the LCD panel down to record from a high position. **[c]**
- When you use the LCD screen outdoors in direct sunlight, the LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

[b]



[c]



Hints for better shooting

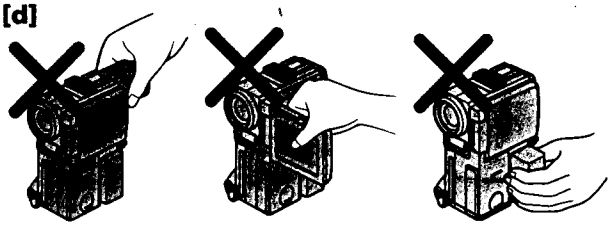
Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder. When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 9/32 inch (6.5mm). Otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

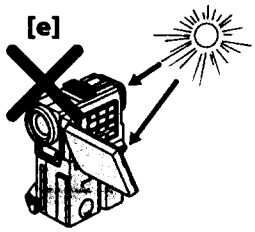
Cautions on the LCD panel and the viewfinder

- Do not pick up the camcorder by the viewfinder, the LCD panel or battery pack **[d]**.
- Do not place the camcorder so as to point the viewfinder or the LCD panel toward the sun. The inside of the viewfinder or the LCD panel may be damaged. Be careful when placing the camcorder under sunlight or by a window **[e]**.
- Do not point the lens toward the sun with a close-up lens attached. Doing so may damage the camcorder.

[d]



[e]



Checking the recorded picture

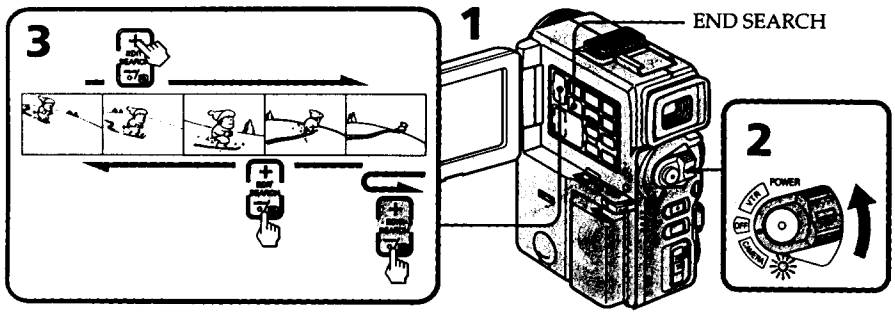
Using EDIT SEARCH, you can review the last recorded scene or check the recorded picture on the LCD screen.

(1) Press OPEN and open the LCD panel.

(2) While pressing the small green button on the POWER switch, set it to CAMERA.

(3) Press the –/⏪ side of EDIT SEARCH momentarily; the last few seconds of the recorded portion play back **(Rec Review)**.

Hold down the –/⏪ side of EDIT SEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side **(Edit Search)**.



To stop playback

Release EDIT SEARCH.

To go back to the last recorded point (END SEARCH)

Press END SEARCH. The last recorded point is played back for about 5 seconds and stops. Note that this function does not work once you eject the tape without cassette memory after you recorded in the tape. If there is a blank portion in the recorded portion, the End Searh may not function correctly.

Note on EDIT SEARCH function

Release EDIT SEARCH once, and press the –/⏪ (or +) side of EDIT SEARCH when changing the playing direction. The direction may not change properly if pressing EDIT SEARCH soon after releasing the button.

Playing back a tape

You can monitor the playback picture on the LCD screen or in the viewfinder.

(1) Insert the recorded tape with the window facing out.

(2) Press OPEN and open the LCD panel. Adjust the angle of the LCD panel.

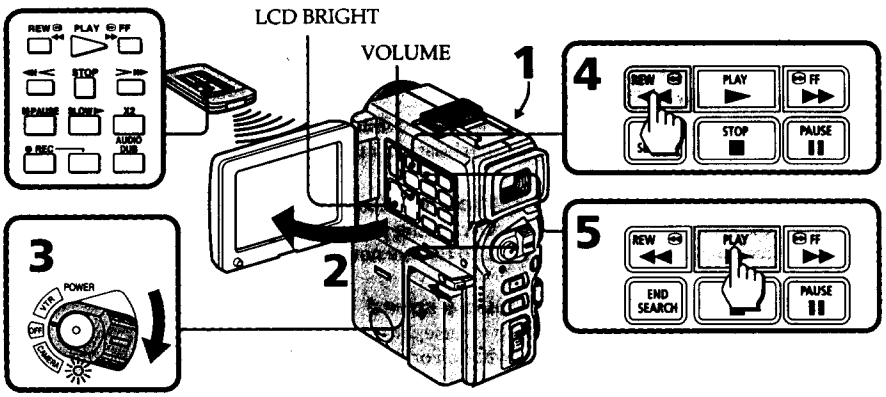
(3) While pressing the small green button on the POWER switch, set it to VTR. The power lamp under the POWER switch lights up.

(4) Press ◄◄ to rewind the tape.

(5) Press ► to start playback.

(6) Adjust the volume using VOLUME and the brightness of the LCD screen using LCD BRIGHT.

You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR.



To stop playback, press ■.

To rewind the tape, press ◄◄.

To fast-forward the tape rapidly, press ►►.

Using the Remote Commander

You can control playback using the supplied Remote Commander. Before using the Remote Commander, insert the size AA (R6) batteries.

To display the LCD screen indicators

Press DISPLAY. (p. 95)
To erase the indicators, press again.

Note on screen indicators

The screen indicators in the viewfinder are always displayed.

Using headphones

Connect headphones (not supplied) to the AUDIO VIDEO OUT/🎧 jack (p. 97). You can adjust the volume of the headphones using VOLUME.

Playing back a tape

To view the playback picture in the viewfinder

Close the LCD panel and pull out the viewfinder until it clicks. The viewfinder turns on automatically.
When using the viewfinder, you can monitor the sound only by using headphones.
In order to view a picture on the LCD screen again, move the viewfinder back and open the LCD panel. The viewfinder will automatically turn off.

Various playback modes

To view a still picture (playback pause)

Press II during playback. To resume playback, press II or ►.

To locate a scene (picture search)

Keep pressing ◄◄ or ►► during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (skip scan)

Keep pressing ◄◄ while rewinding or ►► while advancing the tape. To resume normal rewinding or fast-forward, release the button.

To view the picture at 1/3 speed (slow playback)

Press I► on the Remote Commander during playback. For slow playback in reverse direction, press <, then press I►. To resume normal playback, press ►.

To view the picture at double speed

For double speed playback in the reverse direction, press <, then press x2 on the Remote Commander during playback. For double speed playback in the forward direction, press >, then press x2 during playback. To resume normal playback, press ►.

To view the picture frame-by-frame

Press ◄II or II► on the Remote Commander in playback pause mode. If you keep pressing the button, you can view the picture at 1/30 speed. To resume normal playback, press ►.

To change the playback direction

Press < on the Remote Commander for reverse direction or > on the Remote Commander for forward direction during playback. Or keep pressing EDIT SEARCH during playback pause mode. To resume normal playback, press ►.

Notes on playback

- The sound is muted in the various playback modes.
- During playback other than normal playback, the picture record or played back last time may appear in mosaic image. This is not malfunction.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode. To resume playback, press ►.

Note on slow playback

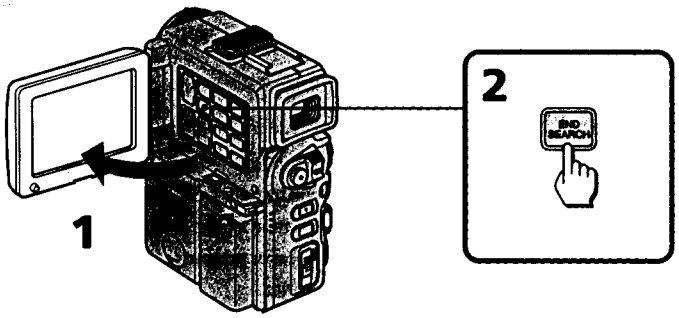
The slow playback can be performed smoothly on this camcorder; however, this function does not work for an output signal from the DV IN/OUT jack.

Searching for the end of the picture

You can go to the end of the recorded portion after you record and play back the tape. The tape starts rewinding or fast-forwarding and the last about 5 seconds of the recorded portion plays back. Then the tape stops at the end of the recorded picture **(End Search)**.

(1) Press OPEN and open the LCD panel.

(2) Press END SEARCH.
This function works when the POWER switch is set to CAMERA or VTR.



Notes on End Search

- When you use a tape without cassette memory, the End Search function does not work once you eject the cassette after recording. (The End Search function will work when you record again.)
- If there is a blank portion in the recorded portion, the End Search may not function correctly.

Advanced operations

Using alternative power sources

You can choose any of the following power sources for your camcorder: battery pack and house current. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	Supplied AC power adaptor
Outdoors	Battery pack	Battery pack NP-F10 (supplied), NP-F20, NP-F30

Note on power sources

Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

Using the house current

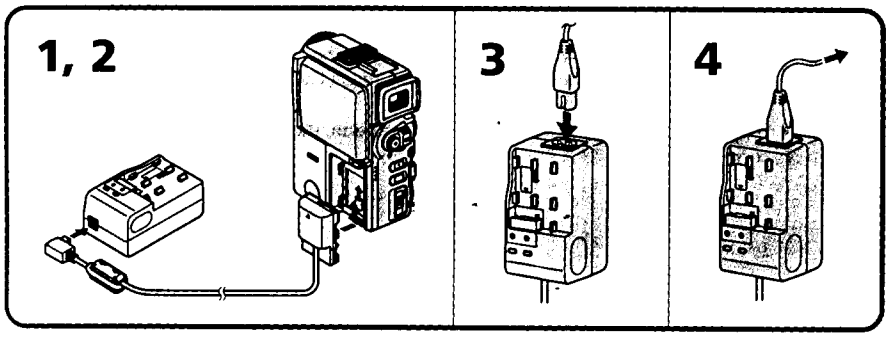
To use the supplied AC power adaptor:

(1) Connect the supplied connecting cord to the DC OUT jack on the AC power adaptor.

(2) Slide the connecting plate in the direction of the arrow.

(3) Connect the power cord to the AC power adaptor.

(4) Connect the power cord to a wall outlet.



To remove the connecting plate

The connecting plate is removed in the same way as the battery pack.

WARNING

The power cord must only be changed at a qualified service shop.

PRECAUTION

The set is not disconnected from the AC power source (mains) as long as it is connected to a wall outlet, even if the set itself has been turned off.

This mark indicates that this product is a genuine accessory for Sony video product.
When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

Changing the mode settings

LTR SIZE <●NORMAL/2X>
- Normally select NORMAL.
- Select 2X to display selected menu item by twice size of normal.

BEEP <●MELODY/NORMAL/OFF>
- Select MELODY so that melody sounds when you start/stop recording, etc.
- Select NORMAL so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the melody and beep sound.

COMMANDER* <●ON/OFF>
- Normally select ON.
- Select OFF when the camcorder responds to signals from other remote commanders.

DISPLAY <●LCD or V-OUT/LCD>
- Normally select LCD.
- Select V-OUT/LCD to display indicator both on the LCD screen and the TV screen.

Items for CAMERA mode only

PROGRAM AE*

Select this item to use the PROGRAM AE function. See page 46 for details.

WHT BAL* <●AUTO/HOLD/OUTDOOR/INDOOR>
- Normally select AUTO to adjust the white balance automatically.
- Select HOLD when recording monochromatic subject or background.
- Select OUTDOOR when recording in the outdoor mode.
- Select INDOOR when recording in the indoor mode.

AUTO SHTR <●ON/OFF>
- Normally select ON.
- Select OFF not to use the auto shutter.

This function automatically adjust the exposure time by varying the shutter speed of the electronic shutter depending on the quantity of the incident light. This function is useful to prevent optical blurring that may possibly occur in shooting an excessively bright object without any ND filter.

D ZOOM <●ON/OFF>
- Select ON to activate digital zooming.
- Select OFF not to use the digital zoom. The camcorder goes back to 10x optical zoom.

16:9WIDE <●OFF/ON>

Select this item to record a 16:9 wide picture. See page 35 for details.

STEADYSHOT <●ON/OFF>
- Normally select ON.
- Select OFF when you do not have to worry about camera-shake.

Changing the mode settings

AUDIO MODE <●12BIT/16BIT>

- Normally select 12BIT to record two stereo sound.
- Select 16BIT to record the one stereo sound with high quality.
 If you select 16BIT, you cannot add an audio sound.

CLOCK SET

Select this item to reset the date or time.

See page 74 for details.

DEMO MODE <●STBY/ON or OFF>

- Select STBY/ON to glance over the function of camcorder.
- Select OFF not to display demonstration.

Notes on DEMO MODE

- DEMO MODE is set to STBY (Standby) /ON at the factory and the demonstration starts about 10 minutes after you set the POWER switch to CAMERA without inserting a cassette.
- You cannot select DEMO MODE when a cassette is inserted in the camcorder.
- If you insert a cassette during the demonstration, the demonstration stops. You can start recording as usual. DEMO MODE automatically returns to STBY/ON.

To look at the demonstration at once

Eject the cassette, if inserted. Select STBY/ON of DEMO MODE and erase the menu display. The demonstration will begin.
When you turn off the camcorder once, DEMO MODE automatically returns to STBY/ON.

WORLD TIME

Select this item to set the clock for a local time by a time difference.

REC LAMP <●ON/OFF>

- Normally select ON.
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.

When recording a close subject

When REC LAMP is set to ON, the red camera recording lamp on the front of the camcorder may reflect on the subject if it is close. In this case, we recommend you set REC LAMP to OFF.

Changing the mode settings

You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

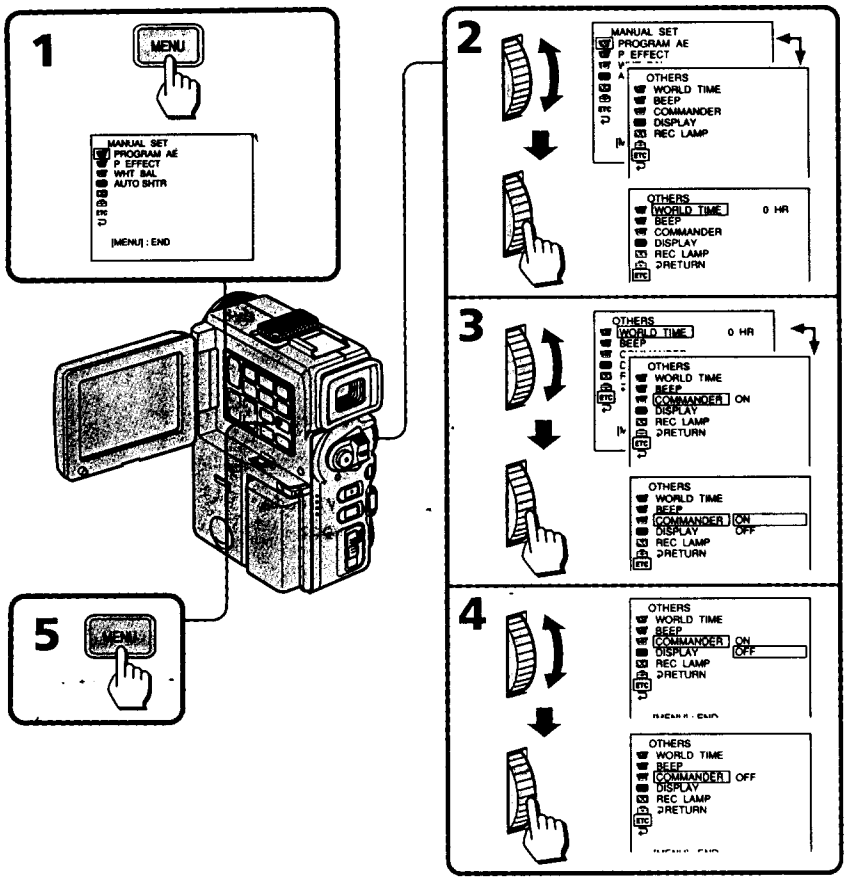
(1) Press MENU to display the menu on the LCD screen.

(2) Turn the control dial to select the desired icon in the left side of the menu, then press the control dial.

(3) Turn the control dial to select the desired item, then press the control dial.

(4) Turn the control dial to select the desired mode, and press the control dial. If you want to change the other modes, repeat steps 3 and 4. If you want to change the other items, select ↩ RETURN and press the confrol dial, then repeat steps from 2 to 4.

(5) Press MENU or select ↩ icon to erase the menu display.



Note on mirror mode

While recording in mirror mode, the menu does not appear on the LCD screen or in the viewfinder.

Note on changing the mode settings

Menu items differs depending on the setting of the POWER switch to VTR or CAMERA.

Changing the mode settings

Selecting the mode setting of each item

● is set at factory.

Items for both CAMERA and VTR modes

P EFFECT**
Select this item to enjoy the picture effect. See page 36 for details.

LCD COLOR
Select this item and change the level of the indicator by turning control dial up or down to adjust the color intensity of the picture.

VF BRIGHT
Close the LCD panel and pull out the viewfinder.
Select this item to adjust the brightness of the viewfinder. The viewfinder becomes brighter when you turn the control dial up, and darker when you turn it down.

TITLEERASE
Erase the title you have superimposed.

TAPE TITLE
Select this item to label the cassette tape. See page 55 for details.

ERASE ALL <RETURN/OK>
- Select RETURN to cancel the erase operation.
- Select OK to erase all data on the cassette memory.

REC MODE <●SP/LP>
- Select SP when recording in SP (standard play) mode.
- Select LP when recording in LP (long play) mode.

REMAIN <●AUTO/ON>
- Select AUTO when you want to display the remaining tape indicator
 - for about 8 seconds after the camcorder is turned on and calculates the remainder of the tape.
 - for about 8 seconds after a cassette is inserted and the camcorder calculates the remainder of the tape.
 - for about 8 seconds after ► is pressed in VTR mode.
 - for about 8 seconds after DISPLAY is pressed to display the screen indicator.
 - for the period of tape rewinding, forwarding or picture search in VTR mode.
- Select ON to always display the remaining tape indicator.

Changing the mode settings

Items for VTR mode only

HiFi SOUND* <●STEREO/1/2>

- Select STEREO to play back stereo sound or main and sub sound (for dual sound).
- Select 1 to play back the left sound (for stereo sound) or main sound (for dual sound).
- Select 2 to play back the right sound (for stereo sound) or sub sound (for dual sound).

AUDIO MIX*

Select this item and adjust the balance between the stereo 1 and stereo 2 by turning the control dial.

Note on AUDIO MIX

When playing back a tape recorded in the 16BIT mode, you cannot adjust the balance in AUDIO MIX.

CM SEARCH <●ON/OFF>

- Select ON to search using cassette memory.
- Select OFF to search without using cassette memory.

TITLE DISP <●ON/OFF>

- Select ON to display the title you have chosen.
- Select OFF not to display the title.

DATA CODE <●DATE/CAM or DATE>

- Select DATE/CAM to display date and recording data during playback.
- Select DATE to display date during playback.

* These settings return to the default 5 minutes or more after the power source is disconnected or battery is removed. As far as the items without an asterisk are concerned, their settings are retained even when the power source is disconnected or battery is removed, as long as the lithium battery is charged.

** P EFFECT setting returns to OFF when the power is turned off.

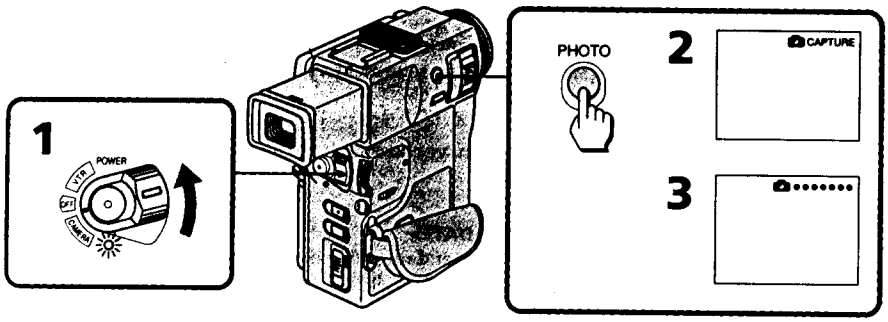
Photo recording

You can record a still picture like a photograph for about seven seconds. This mode is useful when you want to enjoy a picture such as a photograph or when you print a picture using a video printer (not supplied). You can record about 510 pictures in SP mode on a 60-minute tape.

(1) While pressing the small green button on the POWER switch, set it to CAMERA.

(2) Keep pressing PHOTO lightly until a still picture and "CAPTURE" appear on the LCD screen or in the viewfinder.
Recording does not start yet. To change the still picture, release PHOTO, select still picture again, and keep pressing PHOTO lightly again.

(3) Press PHOTO deeper.
The still picture on the LCD screen or in the viewfinder is recorded for about seven seconds. The sound during those seven seconds is also recorded. You cannot change the POWER switch or press PHOTO during recording.



When shooting in the dark

Install the video flash (not supplied) to the accessory shoe. If the exposure is in manual mode, we recomend you to set it to automatic exposure mode.

When ϟ appears on the LCD screen or in the viewfinder, the video flash is ready to be used.

When installing the video flash, the noise may be recorded or the sound quality may change. In this case, use the accessory shoe adaptor (not supplied).

Note on using the Remote Commander

If you press the PHOTO button on the Remote Commander when a picture appears on the LCD screen or in the viewfinder, the camcorder will record that picture immediately. You cannot change the picture by using this button.

Note on the still picture

When a moving picture is recorded in the PHOTO mode, the picture may be blurred if it is played back on another VCR. This is not a malfunction.

When you press PHOTO deeply during normal recording

The picture on the LCD screen or in the viewfinder whenever you press PHOTO will be recorded. You cannot check the recorded picture by pressing PHOTO lightly.

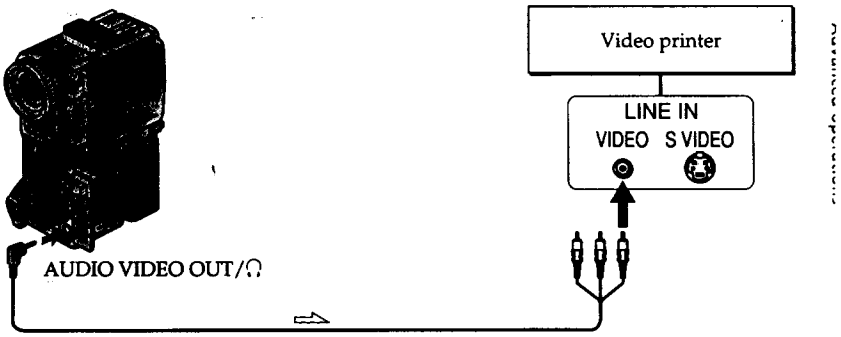
After the moving picture is recorded as a still picture for about seven seconds, the camcorder will go back to Standby mode. You cannot change the POWER switch or press PHOTO during recording.

Photo recording

Printing the still picture

You can print a still picture by using the video printer (not supplied). Connect the video printer using the supplied A/V connecting cable.

Connect it to the AUDIO VIDEO OUT/🎧 jack and connect the yellow plug of the cable to the video input of the video printer. Refer to the operating instructions of the video printer as well.



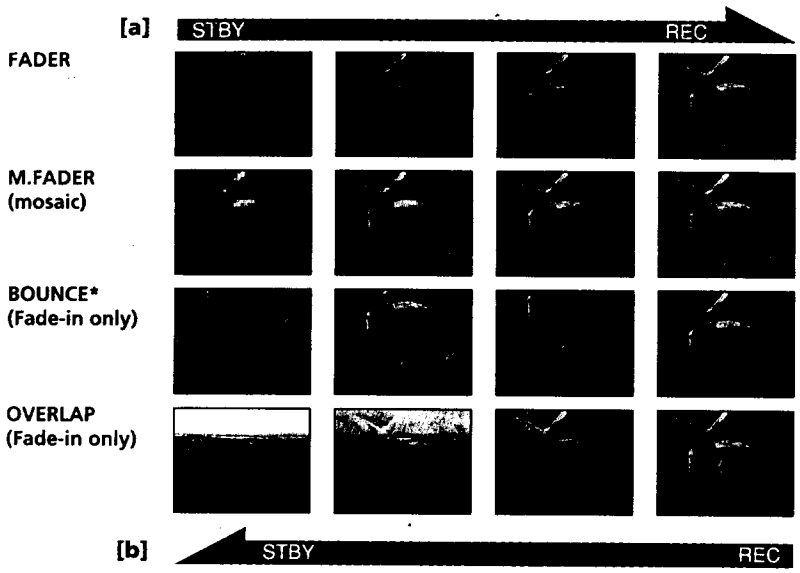
If the video printer is equipped with S video input

Use the S video connecting cable (not supplied). Connect it to the S VIDEO OUT jack and the S video input of the video printer.

Using the FADER function

Selecting the fader function

You can fade in or out to give your recording a professional appearance.
When the picture fades in, the sound gradually increases. When the picture fades out, the sound gradually decreases.



MONOTONE
When fading in, the picture gradually changes from black and while to color.
When fading out, the picture gradually changes from color to black and white.

* When D ZOOM in the menu system is set to ON, you cannot use this funcion.

Using the FADER function

Using the fader function

When fading in [a]

(1) While the camcorder is in Standby mode, press FADER until the desired indicator flashes.

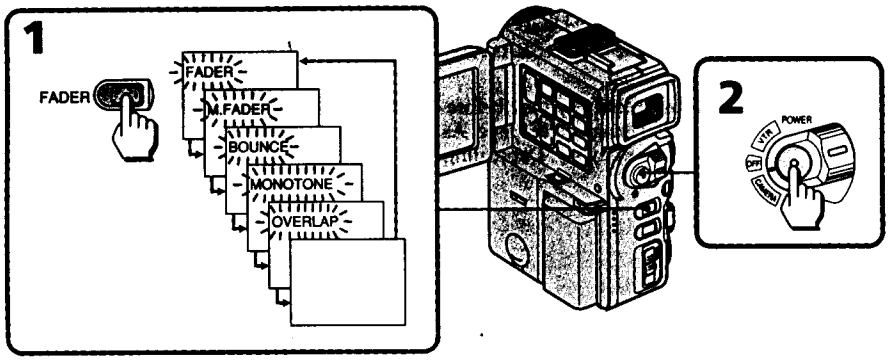
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When fading out [b]

(1) During recording, press FADER until the desired indicator flashes.

(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.

The fading mode selected last is indicated first of all.



When you use the bounce function

Set D ZOOM to OFF in the menu system.

Note on the bounce function

When you use the following functions, "BOUNCE" indicator does not appear.

- Wide mode
- Picture effect mode
- PROGRAM AE mode

Using the FADER function

To cancel the fader function

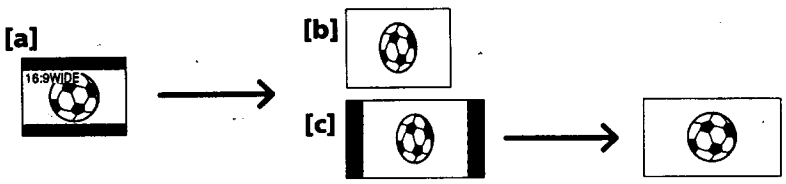
Before pressing START/STOP, press FADER until the indicator disappears.

Notes on the fader function

- While using the bounce function, you cannot use the following functions.
 - Exposure
 - Focus
 - Zoom
- You cannot use the fader function in the following situations.
 - The START/STOP MODE switch is set to ⏚ ANTI GROUND SHOOTING or **5SEC**
 - The menu is displayed in the viewfinder or on the LCD screen.
- You cannot use the following functions while using the fader function. Also, while using the following functions you cannot use the fader function.
 - Functions using the DIGITAL EFFECT button
 - Low Lux mode of PROGRAM AE (overlap function only)
 - Photo recording
- If you do not record anything before operating the overlap function, the camcorder memorizes the image on the tape. As the image is being memorized, the OVERLAP indicator flashes quickly. Depending on the tape condition, the picture may not be recorded clearly.

Using the wide mode function

You can record a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 WIDE).
The picture with black bands at the top and the bottom on the LCD screen or in the viewfinder **[a]** is normal. The picture on a normal TV **[b]** is horizontally compressed. You can watch the picture of normal images on a wide-screen TV **[c]**.



Using the wide mode function

Set 16:9WIDE in the menu system to ON (p. 25).

To cancel wide mode

Select OFF in the menu system.

To watch the tape recorded in wide mode

To watch the tape recorded in wide mode, set the TV to full mode. For details, refer to the operating instructions of your TV.

Note that the picture recorded in wide mode looks compressed on a normal TV.

Notes on wide mode

- You cannot select or cancel the wide mode during recording.
- In wide mode, you cannot select the old movie function with DIGITAL EFFECT and the bounce function with FADER.

Enjoying picture effect

Selecting picture effect

The Picture Effect function allows you to make pictures like those on television. You can also see pictures while using this function during playback.

[a] [b] [c] [d] [e] [f]



NEG. ART [a]*
The color of the picture is reversed.

SEPIA*
The picture is sepia.

B&W*
The picture is monochrome (black and white).

SOLARIZE [b]*
The light intensity is clearer, and the picture looks like an illustration.

SLIM [c]
The picture expands vertically.

STRETCH [d]
The picture expands horizontally.

PASTEL [e]
The picture is in pastel tones.

MOSAIC [f]
The picture is mosaic.

* These functions can be used during playback.

Using picture effect function

Select the desired picture effect mode in the menu system (p. 25).

To return to normal mode

Select OFF in the menu system.

Notes on the picture effect

- When you turn the power off, the camcorder returns automatically to normal mode (OFF).
- While using the picture effect function, you cannot select the old movie function with DIGITAL EFFECT.

When using the picture effect during recording

The effects will be also recorded on the tape.

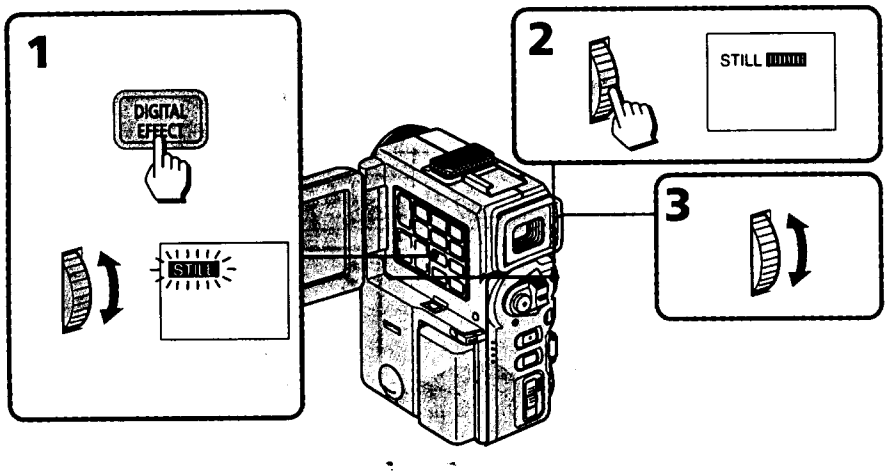
Superimposing a still picture on a moving picture

Using the still function, you can record a still picture to be superimposed on a moving picture. The sound is recorded normally.

(1) While the camcorder is in Standby mode or recording mode, press DIGITAL EFFECT and turn the control dial until the STILL indicator flashes.

(2) Press the control dial.
The STILL indicator lights up and the still bars appear. The still picture is stored in memory.

(3) Turn the control dial to adjust the rate of the still picture you want to superimpose on the moving picture. The rate of the still picture increases with the number of the still bars.



To cancel the still function

Press DIGITAL EFFECT.

Notes on the still function

- You cannot use the following functions while recording a still picture.
 - Functions using the FADER button
 - Low Lux mode of PROGRAM AE
 - Functions using the PHOTO button
- When you set the POWER switch to OFF, the still function will be cancelled automatically.

Recording still pictures successively

Using the flash motion function, you can record still pictures successively at constant intervals. The sound is recorded normally.

(1) While the camcorder is in Standby mode or recording mode, press DIGITAL EFFECT and turn the control dial until the FLASH indicator flashes.

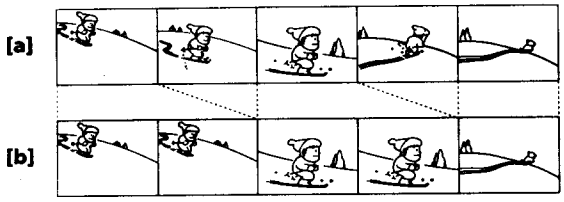
(2) Press the control dial.

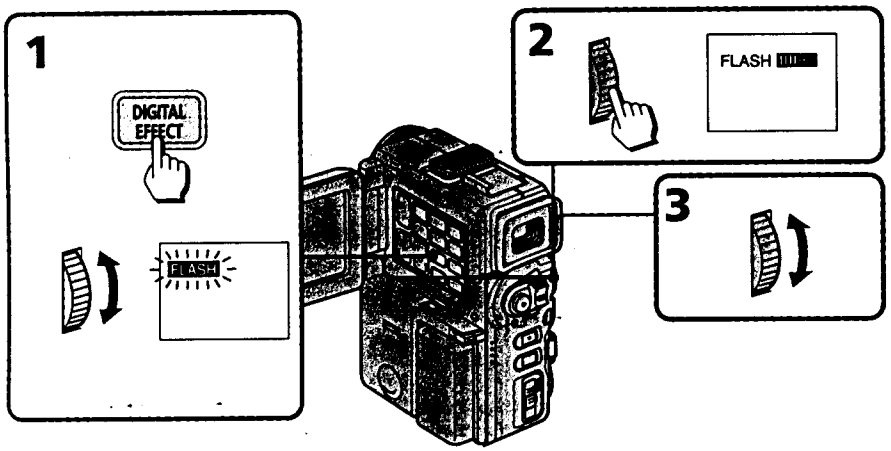
The FLASH indicator lights up and the flash motion bars appear.

(3) Turn the control dial to adjust the interval of flash motion. The intervals increase with the number of the flash motion bars.

[a] normal recording

[b] flash motion recording





To cancel the flash motion function

Press DIGITAL EFFECT.

Notes on the flash motion function

- You cannot use the following functions during the flash motion recording.
 - Functions using the FADER button
 - Low Lux mode of PROGRAM AE
 - Functions using the PHOTO button
- When you set the POWER switch to OFF, the flash motion function will be cancelled automatically.

Replacing a brighter portion of a still picture with a moving picture

Using the luminancekey function, you can replace a brighter portion of a still picture with a moving picture.
For example, you can superimpose the favorite scene on the background if you store the picture in memory as a still picture, such as a person in a bright background. The sound is recorded normally.

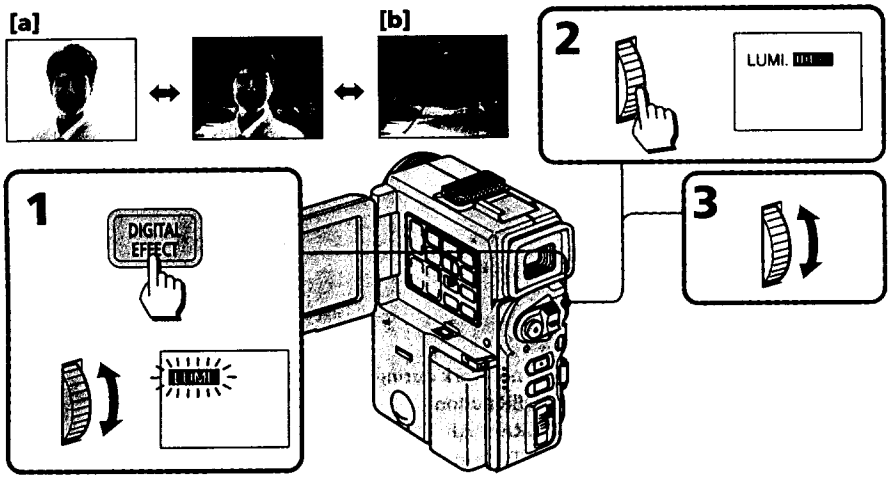
(1) While the camcorder is in Standby mode or recording mode, press DIGITAL EFFECT and turn the control dial until the LUMI. indicator flashes.

(2) Press the control dial.
The LUMI. indicator lights up and the luminancekey bars appear. The still picture is stored in memory.

(3) Turn the control dial to adjust the color scheme of the still picture. The rate of the still picture increases by the number of the luminancekey bars.

[a] still picture

[b] moving picture



To cancel the luminancekey function

Press DIGITAL EFFECT.

Notes on the luminancekey function

- The following functions do not work during luminancekey mode.
 - Functions using the FADER button
 - Low Lux mode of PROGRAM AE
 - Functions using the PHOTO button
- When you set the POWER switch to OFF, the luminancekey function will be cancelled automatically.

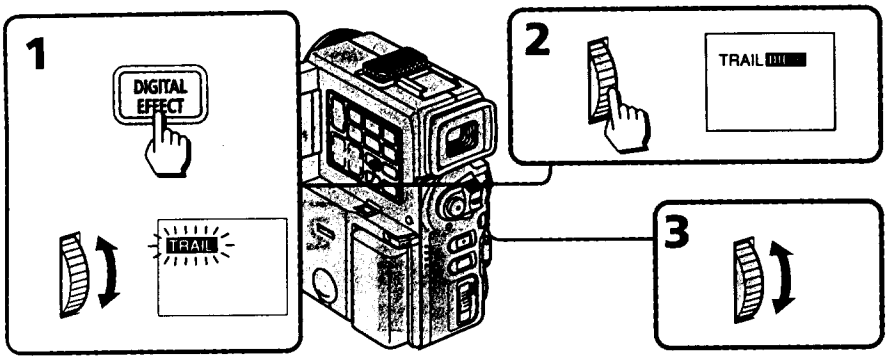
Adding an incidental image to pictures

Using the trail function, you can record the picture which leaves an incidental image, such as a trail. The sound is recorded normally. You can adjust the vanishing time of the incidental image with the control dial.

(1) While the camcorder is in Standby mode or recording mode, press DIGITAL EFFECT and turn the control dial until the TRAIL indicator flashes.

(2) Press the control dial.
The TRAIL indicator lights up and the trail bars appear.

(3) Turn the control dial to adjust the vanishing time of the incidental image.
The vanishing time increases with the number of the trail bars.



To cancel the trail function

Press DIGITAL EFFECT.

Notes on the trail function

- The following functions do not work during trail mode.
 - Functions using the FADER button
 - Low Lux mode of PROGRAM AE
 - Functions using the PHOTO button
- When you set the POWER switch to OFF, the trail function will be cancelled automatically.

Using slow shutter

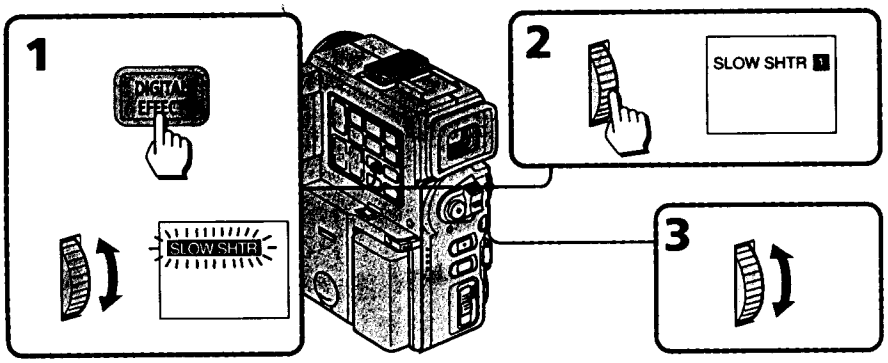
If you want to record a dark picture more brightly, or make the movement of the subject seem lively, set the shutter speed to 1/30, 1/15, 1/8 or 1/4 (slow shutter).

(1) While the camcorder is in Standby mode or recording mode, press DIGITAL EFFECT and turn the control dial until the SLOW SHTR (shutter) indicator flashes.

(2) Press the control dial.
The SLOW SHTR indicator lights up and the shutter speed number (1 - 4) appears.

(3) Turn the control dial to select the shutter speed.
As the shutter speed number becomes bigger, the shutter speed becomes slower.

Shutter speed number	Shutter speed
SLOW SHTR 1	1/30
SLOW SHTR 2	1/15
SLOW SHTR 3	1/8
SLOW SHTR 4	1/4



To cancel the slow shutter function

Press DIGITAL EFFECT.

When recording with the slow shutter function

Auto focus may not be effective. Focus manually using a tripod.

Notes on the slow shutter function

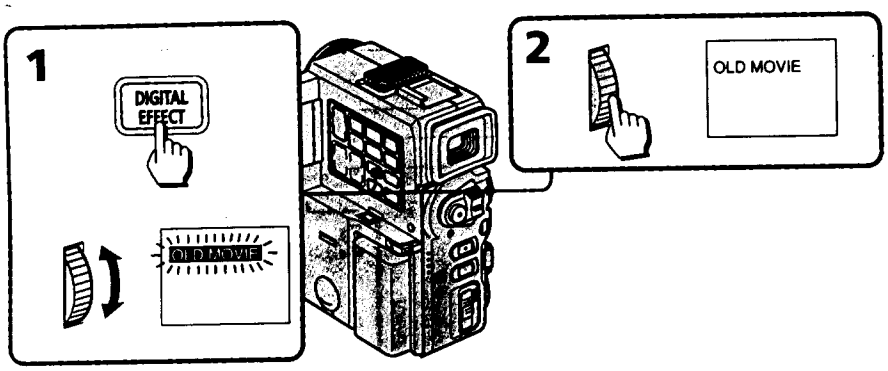
- You cannot use the following functions during recording with the slow shutter function.
 - Functions using the FADER button
 - PROGRAM AE mode
 - Functions using the PHOTO button
- When you set the POWER switch to OFF, the slow shutter function will be cancelled automatically.

Adding an old movie type atmosphere to pictures

Using the old movie function, you can record the picture such as an old movie. The camcorder automatically sets the wide mode to ON, picture effect to SEPIA, and the appropriate shutter speed.

(1) While the camcorder is in Standby mode or recording mode, press DIGITAL EFFECT and turn the control dial until the OLD MOVIE indicator flashes.

(2) Press the control dial.
The OLD MOVIE indicator lights up.



To cancel the old movie function

Press DIGITAL EFFECT.

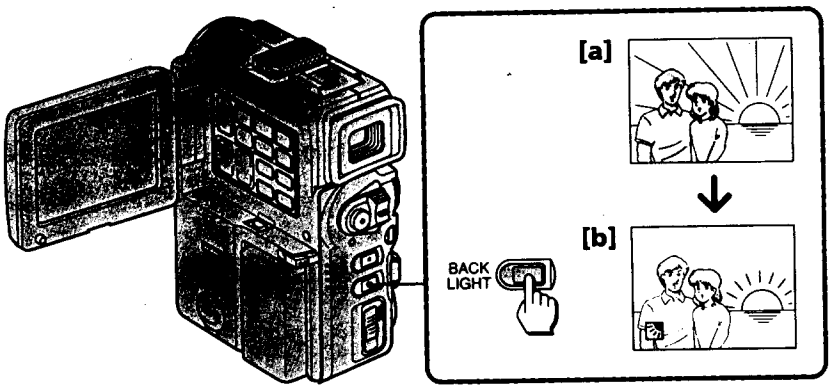
Notes on the old movie function

- The following functions do not work during old movie mode.
 - Functions using the FADER button
 - PROGRAM AE mode
 - Picture effect mode
 - Wide mode
 - Functions using the PHOTO button
- When you set the POWER switch to OFF, the old movie function will be cancelled automatically.

Shooting with backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ◙ indicator appears on the LCD screen or in the viewfinder.



[a] Subject is too dark because of backlight.

[b] Subject becomes bright with backlight compensation.

After shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ◙ indicator disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:

- A subject with a light source nearby or a mirror reflecting light.
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

Note on the BACK LIGHT function

When you press EXPOSURE, the BACK LIGHT function is cancelled.

Adjusting the exposure

When to adjust the exposure

Adjust the exposure manually under the following cases.

[a] 

[b] 

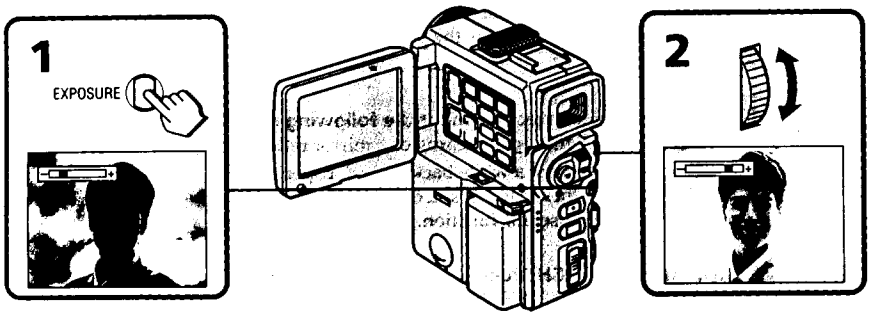
[a]
- The backlighting is too bright (back lighting)
- Insufficient light: most of the picture is dark

[b]
- Bright subject and dark background
- To record the darkness faithfully

Adjusting the exposure

(1) Press EXPOSURE. The exposure indicator appears on the LCD screen or in the viewfinder.

(2) Turn the control dial to adjust the exposure. The exposure is locked at the adjusted brightness.



To return to automatic exposure mode

Press EXPOSURE to turn off the exposure indicator.

Notes
- The control dial does not have a stop position.
- If you select the PROGRAM AE function in the menu system, the exposure comes back to automatic adjustment again.
- When you adjust the exposure manually, you cannot use the BACK LIGHT function.

Adjusting the white balance

White balance adjustment makes white subjects look white and allows more natural color balance for camera recording. Normally white balance is automatically adjusted. You can obtain better results by adjusting the white balance manually when lighting conditions change quickly or when recording outdoors: e.g., neon signs, fireworks.

Selecting the appropriate mode

Select the appropriate white balance mode under the following conditions.

[a]



[b]



[c]



INDOOR mode
- Lighting condition changes quickly. **[a]**
- Too bright place such as photography studios
- Under sodium lamps or mercury lamps

OUTDOOR mode
- Under a color matching fluorescent lamp
- Recording a sunset/sunrise, just after sunset, just before sunrise **[b]**, neon signs, or fireworks **[c]**

HOLD mode
Recording monochromatic subject or background

Setting the white balance

Select the desired white balance mode in the menu system (p. 25).

To return to automatic white balance mode

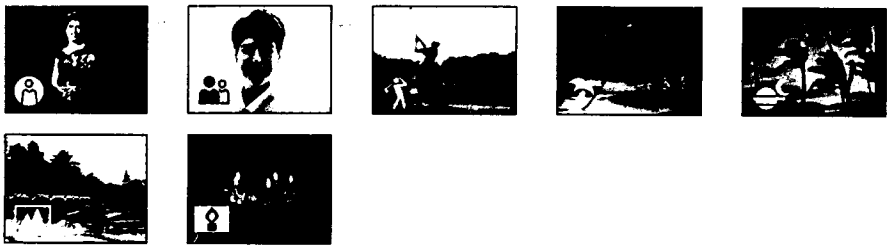
Select AUTO in the menu system.

Using the PROGRAM AE function

You can select from seven PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus), capture high-speed action, record night views, etc.

Selecting the best mode

Select a proper PROGRAM AE mode referring to the following description.



: Spotlight mode
Recording a subject spotlighted on a stage or at a wedding ceremony, etc.

: Soft portrait mode
To record

- A still subject such as a person or flower
- A softened picture
- A person in clearer flesh tones

: Sports lesson mode
Capturing high-speed action in sports such as golf or tennis

: Beach & Ski mode
Recording a person in a place such as on the beach or in the ski slopes where there is a lot of reflection

: Sunset & Moon mode
Recording sunset, night views, fireworks or neon signs

: Landscape mode
Recording a landscape through a window or wire net

: Low Lux mode
For recording a subject in insufficient light. Subject becomes bright.

Using the PROGRAM AE function

Select the desired PROGRAM AE mode in the menu system (P. 25).

To return to automatic adjustment mode

Select AUTO in the menu system.

Notes on focus setting

- In the Spotlight, Sports lesson and Beach & Ski modes, you cannot take close-ups because the camcorder is set to focus only on subjects in the middle to far distance.
- In the Sunset & Moon and Landscape modes, the camcorder is set to focus only on distant subjects.

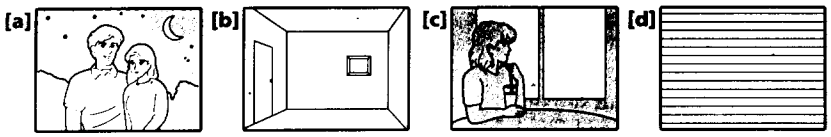
Notes on PROGRAM AE

- The following functions do not work during PROGRAM AE mode.
 - Slow shutter
 - Old movie
- The following functions do not work during Low Lux mode.
 - Functions using the DIGITAL EFFECT button
 - Overlap
 - Bounce
- Flickering or change in color may occur in the following modes if recording is carried out under a discharge tube such as a fluorescent lamp, sodium lamp or mercury lamp. If this happens, select AUTO in the menu system.
 - Soft Portrait mode
 - Sports Lesson mode
- While setting WHT BAL in the menu system to AUTO, the white balance is adjusted even if the PROGRAM AE is selected.
- You can adjust the exposure even if the PROGRAM AE is selected.

Focusing manually

When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.



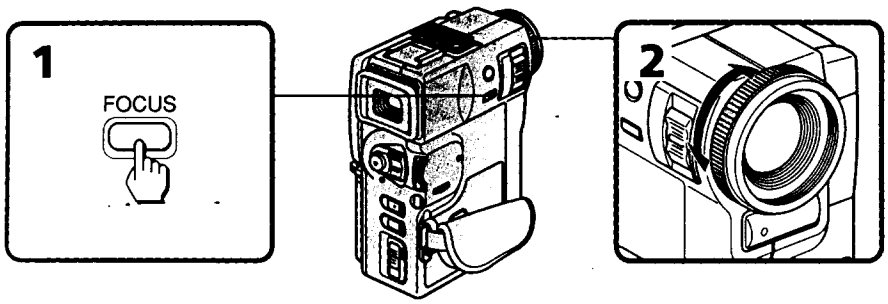
- Insufficient light **[a]**
- Subjects with little contrast — walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.

(1) Press FOCUS lightly. The MF indicator appears on the LCD screen or in the viewfinder.

(2) Turn the focus ring to focus on the subject.



Focusing manually

To focus in infinity
Press FOCUS deeply. ▲ indicator appears on the LCD screen or in the viewfinder. Release to return to manual focus mode.

To return to the autofocus mode
Press FOCUS lightly to turn off ◉, ▲ or 👤 indicator.

To shoot in relatively dark places or to shoot the subject moving quickly outside
Shoot at wide-angle after focusing in the telephoto position.

Note on manual focusing
The following indicators may appear:

▲ when the lens focuses on the most distant subject.

👤 when the lens focuses on the nearest subject.

Releasing the STEADYSHOT function

When the Steady Shot function is working, the camcorder compensates for camera-shake.

You can release the Steady Shot function when you do not need to use it. When the Steady Shot function is released, the indicator appears in the viewfinder or on the LCD screen. When shooting with a tripod, you can get a more natural picture by releasing the Steady Shot function.

Releasing the Steady Shot function

Set STEADYSHOT in the menu system to OFF (P. 25).

To activate the Steady Shot function again
Select ON in the menu system.

Notes on the Steady Shot function
- The Steady Shot function will not correct excessive camera-shake.
- When you switch the Steady Shot function on or off, the exposure may fluctuate.
- If you use a tele conversion lens (not supplied) or a wide conversion lens (not supplied), the Steady Shot function may not work.

Superimposing a title

If you use a tape with cassette memory, you can superimpose the titles while recording or after recording. When you playback the tape, the title is displayed for 5 seconds from the point where you superimposed it.

You can select from eight preset titles and two original titles (CUSTOM1, CUSTOM2) to superimpose over the picture.

Superimposing titles

(1) Press TITLE to display the titles on the LCD screen.

(2) Turn the control dial to select 🗀, then press the control dial.

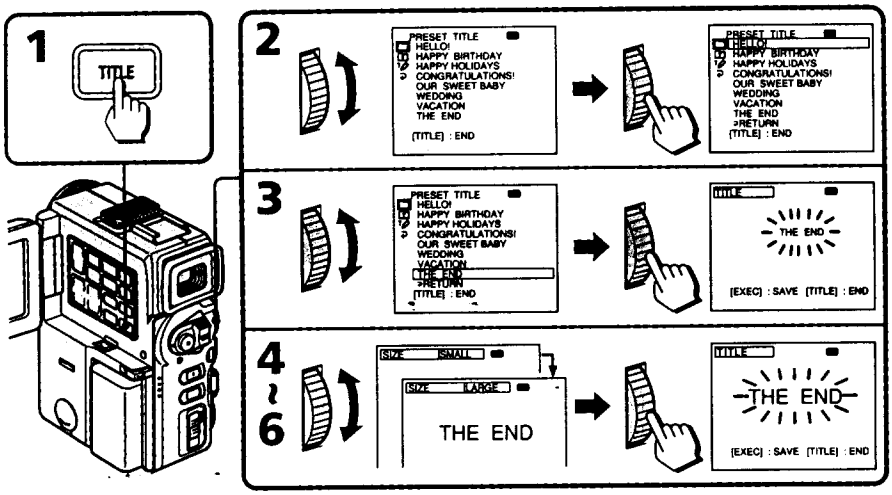
(3) Turn the control dial to select the title, then press the control dial.

(4) Turn the control dial to select COLOR, SIZE or POSITION, then press the control dial.

(5) Turn the control dial to select the desired item, then press the control dial.

(6) Repeat steps 4 and 5 until the title is arranged as desired.

(7) Press the control dial again to complete the setting.



Superimposing a title

While you are playing back, pausing, or recording

After step 7, the "TITLE SAVE" indicator appears on the screen for 5 seconds and the title is set.

While in Standby mode

After step 7, the "TITLE" indicator appears. And when you press START/STOP to start recording, "TITLE SAVE" appears on the screen for 5 seconds and the title is set.

To use the custom title

When you want to use the original title, select 🅒 in step 2.

Notes on superimposing a title

- If you have not given any original title, "- - - - ..." appears on the display.
- The FADER function works while the title is displayed, however, the title does not fade.

Title color changes as follows :

WHITE ↔ YELLOW ↔ VIOLET ↔ RED ↔ CYAN ↔ GREEN ↔ BLUE

Title size changes as follows :

SMALL ↔ LARGE

Title position changes as follows :

When you select the title size "SMALL", you can choose 9 positions. When you select the title size "LARGE" , you can choose 8 positions.

To display no title during playback

Set TITLE DISP to OFF in the menu system.

Notes on titles

- You cannot superimpose a title to a blank portion of the tape.
- The titles you superimposed are displayed by only using the DV format video equipment with index titler function.
- When you are searching the tape using the other video equipment, the portion of the tape you superimpose the title may be detected as an index signal.
- If you input 13 characters or more for a LARGE title, the title is automatically reduced into a proper size after the position is set.

Notes on the cassettes

- If you use a cassette tape set to prevent accidental erasure, you cannot superimpose or erase the title. Slide the protect tab so that the red portion is not visible.
- You can superimpose about 11 to 20 titles in one cassette, if one title consists of about 5 characters.
- If the tape has too many index signals, you may not be able to superimpose a title because the memory is full.

Superimposing a title

Erasing a title

(1) Press MENU to display the menu on the LCD screen.

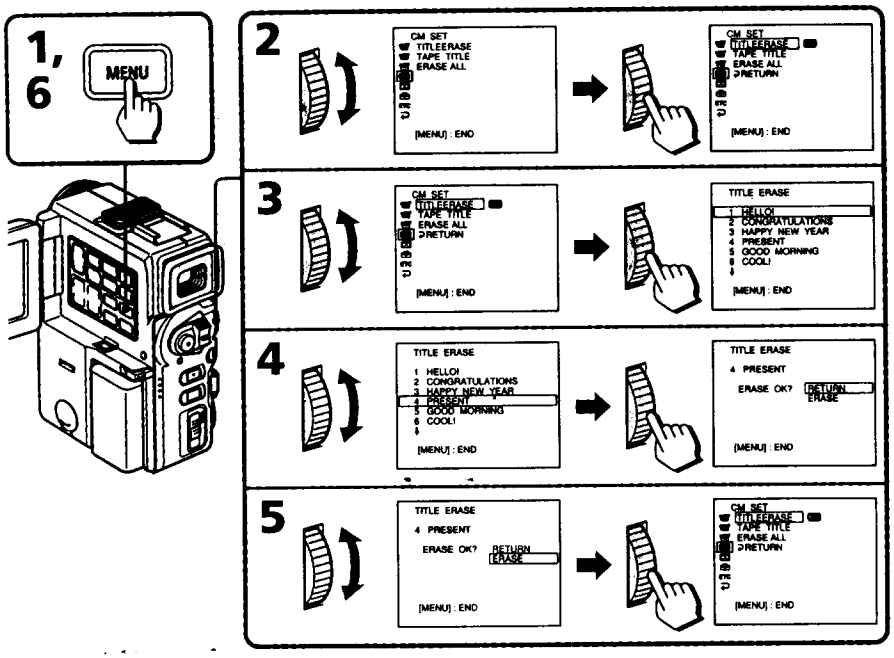
(2) Turn the control dial to select CAM, then press the control dial.

(3) Turn the control dial to select TITLEERASE, then press the control dial.

(4) Turn the control dial to select the title you want to erase, then press the control dial.

(5) Make sure that title is the one you want to erase. Turn the control dial to select ERASE, then press the control dial.

(6) Press MENU to erase the menu display.



Note

If you use a cassette tape set to prevent accidental erasure, you cannot erase the title. Slide the protect tab on the cassette so that the red portion is not visible.

Making a custom title

If you use a tape with cassette memory, you can make two titles of up to 20 characters and store it in memory.

(1) Press TITLE to display the titles on the LCD screen.

(2) Turn the control dial to select , then press the control dial.

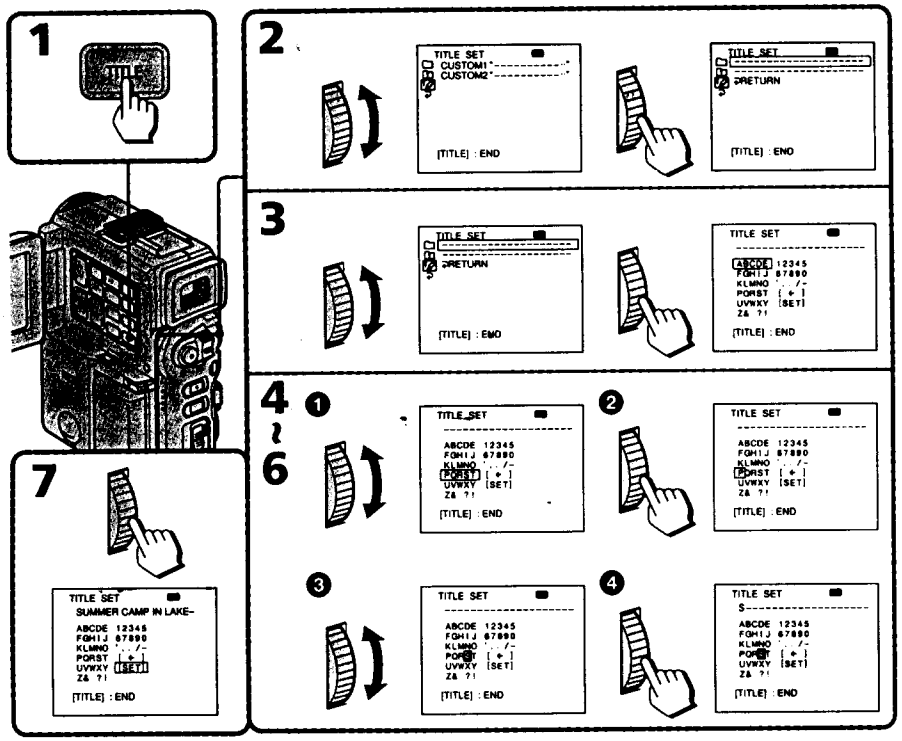
(3) Turn the control dial to select the first line (CUSTOM1) or second line (CUSTOM2), then press the control dial.

(4) Turn the control dial to select the column of the desired character, then press the control dial.

(5) Turn the control dial to select the desired character, then press the control dial.

(6) Repeat steps 4 and 5 until you finish the title.

(7) For finishing the titling work, turn the control dial to select [SET], then press the control dial.



Making a custom title

To erase a character

In step 4, turn the control dial to select [←] then press the control dial. The last character is erased.

To change the title you have made

In step 3, turn the control dial to select CUSTOM1 or CUSTOM2 you want to change, then press the control dial. Erase characters one after another, then make the new title again.

Note

You cannot enter over 20 characters title.

If it takes more than 5 minutes to make a title

If the Standby mode lasts for more than 5 minutes with a cassette inserted, the power will be turned off automatically. If the power is turned off while you are making a title, set the POWER switch to OFF once, then to CAMERA. The title you have made remains stored in memory.

Set the POWER switch to VTR or eject a cassette so that the power does not go off.

Labeling a cassette

If you use a tape with cassette memory, you can label a cassette. The label can consist of up to 10 characters and is stored in cassette memory. When you insert the labeled cassette and set the POWER switch to VTR, the label is displayed for about 5 seconds on the LCD screen, in the viewfinder or on the TV screen.

(1) Insert the cassette you want to label.

(2) Press MENU to display the menu on the LCD screen.

(3) Turn the control dial to select CM, then press the control dial.

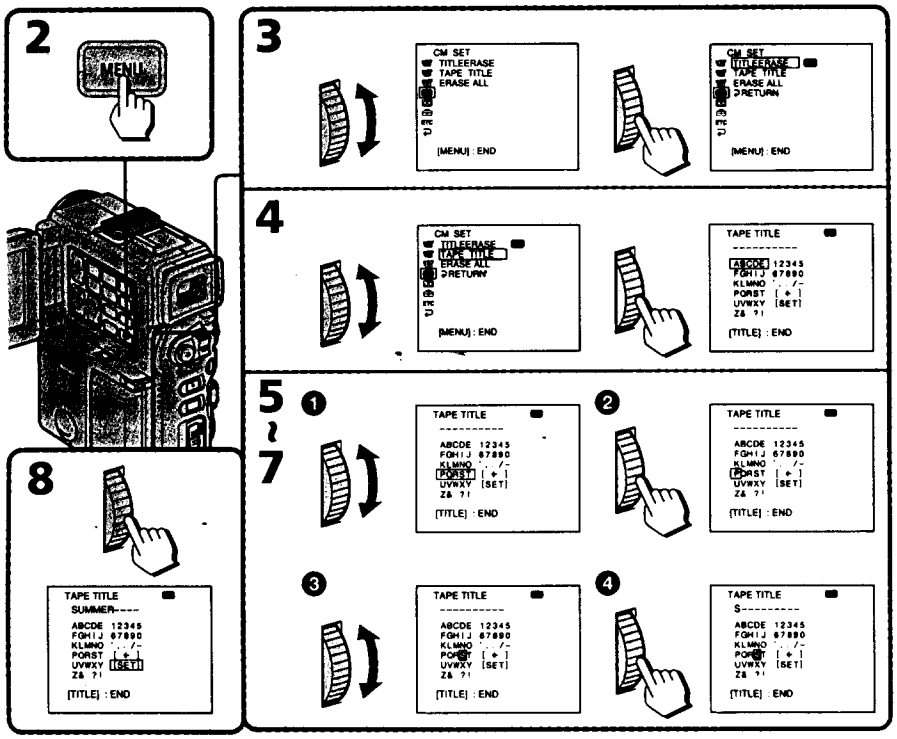
(4) Turn the control dial to select TAPE TITLE, then press the control dial.

(5) Turn the control dial to select the column of the desired character, then press the control dial.

(6) Turn the control dial to select the desired character, then press the control dial.

(7) Repeat steps 5 and 6 until you finish the label.

(8) Turn the control dial to select [SET], then press the control dial.



Labeling a cassette

To erase a character

In step 5 turn the control dial to select [←], then press control dial. The last character is erased.

To change the label you have made

Insert the cassette to change the label, and operate in the same way to make a new label.

If the CM mark appears in step 4

The cassette memory is full. If you erase the title in the cassette, you can label it.

If you have superimposed titles in the cassette

When the label is displayed, up to 4 titles also appear.

Note on "-----" indicator displayed on the LCD screen or in the viewfinder

The "-----" indicates the number of characters you can select for the label. When the "-----" indicator has fewer than 10 spaces, the cassette memory is full.

Note on the cassettes

If you use a cassette tape set to prevent accidental erasure, you cannot label it. Slide the protect tab so that the red portion is not visible.

Watching on a TV screen

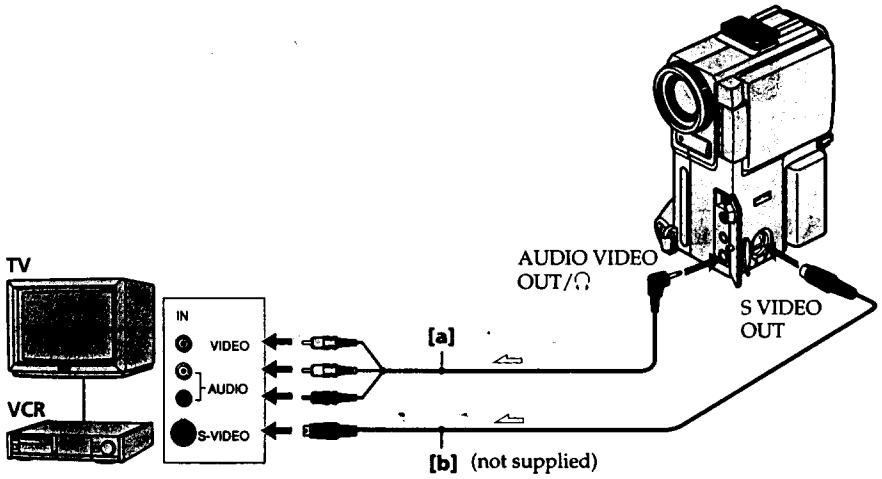
Connect the camcorder to your VCR or TV to watch the playback picture on the TV screen. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use house current for the power source.

Connecting directly to a VCR/TV with Audio/Video input jacks

Open the jack cover and connect the camcorder to the inputs on the TV by using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR. Turn down the volume of the camcorder.

To get higher quality pictures in DV format, connect the camcorder to your TV using the S video connecting cable (not supplied).

If you are going to connect the camcorder using the S video connecting cable (not supplied) **[b]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[a]**.



: Signal flow

If your VCR or TV is a monaural type

Connect the yellow plug of the A/V connecting cable to the video input jack and the white or the red plug to the audio input jack on the VCR or the TV. When the white plug is connected, the left channel audio is output, and the red plug is connected, the right channel audio is output.

Enjoying digital effect during playback

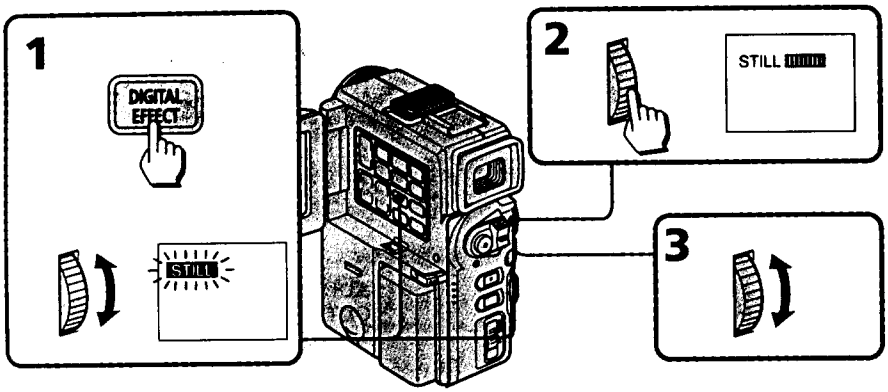
During playback, you can process a scene using the digital effect functions; Still, Flash motion, Luminancekey and Trail. For the features of each function, refer to previous pages.

You can watch the processed picture on a TV or use it for editing on other video equipment. You cannot record on this camcorder during this operation.

(1) During playback, press DIGITAL EFFECT and turn the control dial until the desired digital effect indicator (STILL, FLASH, LUMI. or TRAIL) flashes.

(2) Press the control dial.
The digital effect indicator lights up and the bars appear. In still or luminancekey mode, the picture where you press the control dial is stored in memory as a still picture.

(3) Turn the control dial to adjust the effect.



To cancel the digital effect function

Press DIGITAL EFFECT.

Note on the digital effect function

In skip scan, slow or pause mode, noise appears on the picture.

Searching the boundaries of recorded tape with date – date search

You can search for the boundaries of recorded date - Date Search function. To search for the beginning of the specific date and play back from the point, there are two ways:

- Using cassette memory, you can select the date displayed on the LCD screen or in the viewfinder.
- Without using cassette memory, you can search for the boundaries of recorded date.

You can only operate with the Remote Commander.

Searching for the date by using cassette memory

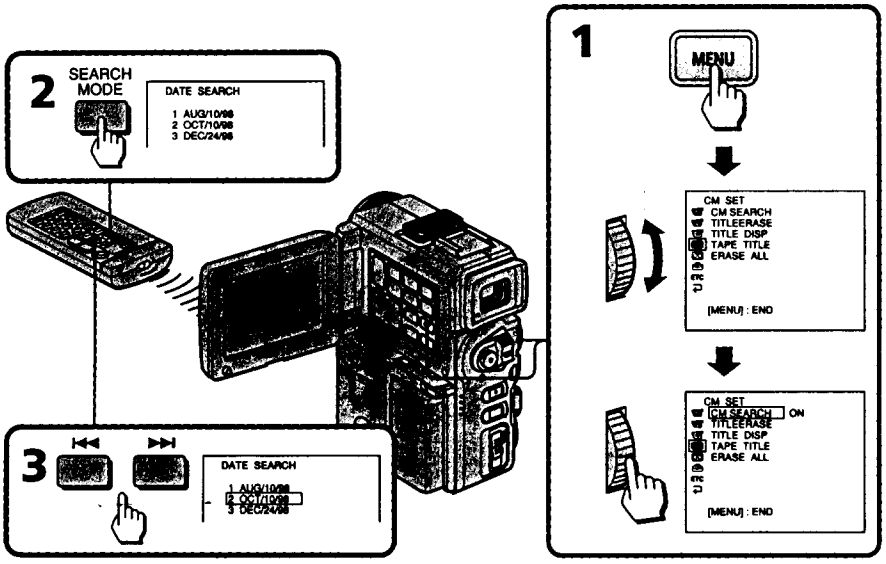
You can use this function only when playing back a tape with cassette memory (p. 72).

(1) Set CM SEARCH to ON in the menu system (P. 25).

(2) Press SEARCH MODE on the Remote Commander repeatedly, until the date search indicator appears.

(3) Press ⏮ or ⏭ to select the date for playback.

Playback starts from the beginning of the selected date automatically.



To stop searching

Press ■.

Notes

- The interval of the boundaries between the dates needs more than two minutes. The camcorder may not search if the beginning of the recorded date is too close to the next one.
- The cursor in the [00] mark indicates the present point on the tape.
- The cursor on the screen indicates the date selected last time.
- If a tape has a blank portion in the recorded portions, the Date Search function will not work correctly.

Searching the boundaries of recorded tape with date – date search

Searching for the date without using cassette memory

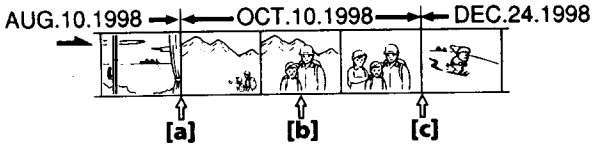
You can use this function whether the tape has cassette memory or not.

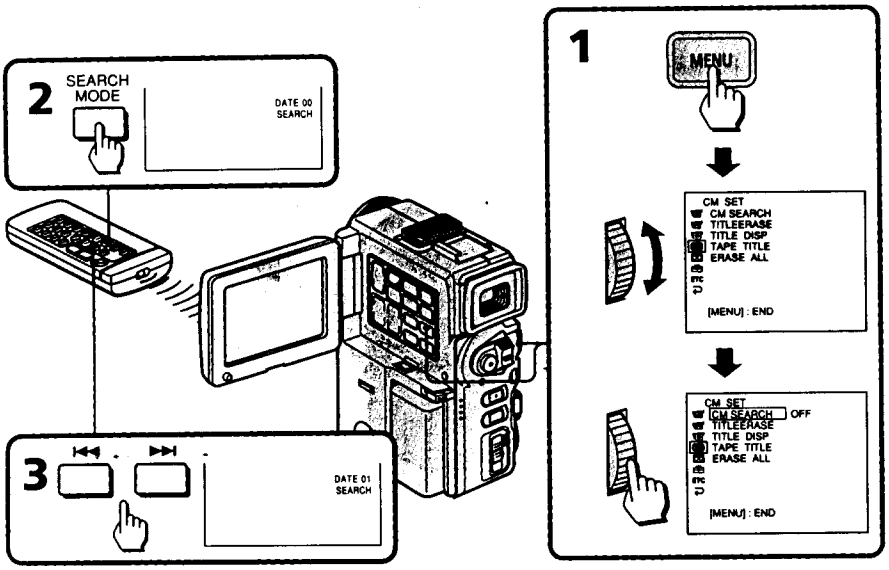
(1) Set CM SEARCH to OFF in the menu system (P. 25).

(2) Press SEARCH MODE on the Remote Commander repeatedly, until the date search indicator appears.

(3) When the current position is **[b]**, press ⏮ to search towards **[a]** or press ⏭ to search towards **[c]**. Each time you press ⏮ or ⏭, the camcorder searches for the previous or next date.

Playback starts automatically when date changed.





To stop searching

Press ■.

Searching the boundaries of recorded tape with title – title search

You can search for the boundaries of recorded tape with title – Title search function. If you use a tape with cassette memory, you can select the title displayed on the LCD screen or in the viewfinder.

You can only operate with the Remote Commander.

Searching for the title by using cassette memory

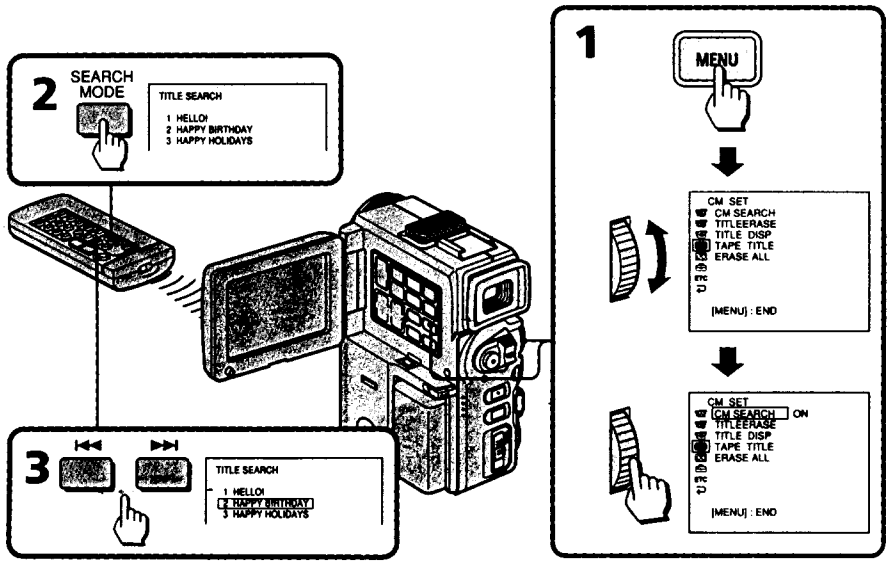
You can use this function only when playing back a tape with cassette memory (p. 72).

(1) Set CM SEARCH to ON in the menu system (P. 25).

(2) Press SEARCH MODE on the Remote Commander repeatedly, until the title search indicator appears.

(3) Press ⏮ or ⏭ to select the title for playback.

Playback starts from the scene of the selected title automatically.



To stop searching

Press ■.

Notes

- You cannot superimpose or search a title, if you use a cassette tape without cassette memory.
- The camcorder may not search, if a tape has a blank portion in the recorded portions.

Searching for a photo – photo search/photo scan

You can search for the recorded still picture - Photo Search function. There are two modes in Photo Search:

- Using cassette memory, you can select the recorded date and time which is displayed on the LCD screen or in the viewfinder.
- Without using cassette memory, you can search the still picture regardless of the date and time.

You can also search for still pictures one after another and display each picture for five seconds automatically - Photo Scan function. Even if your tape has no cassette memory, you can use the Photo Scan function.

You can only operate with the Remote Commander.

Searching for a photo by using cassette memory

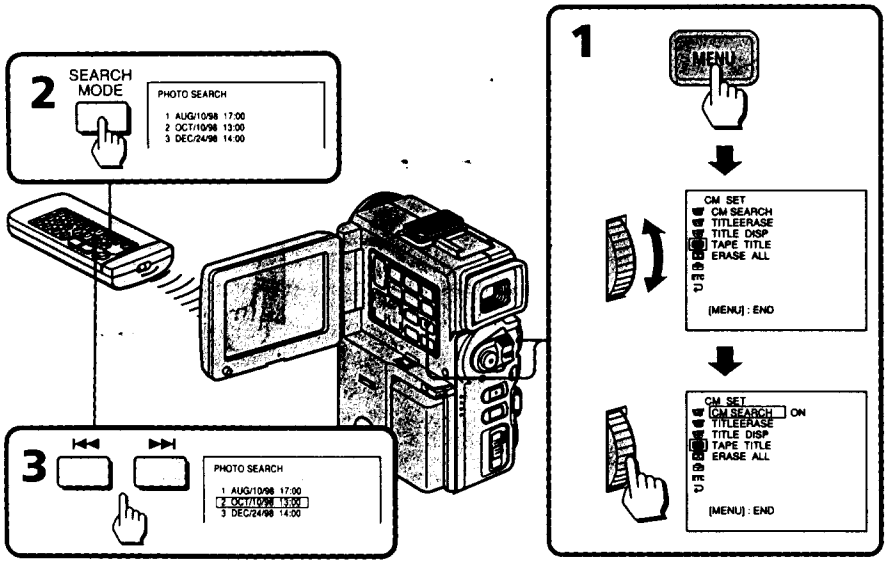
You can use this function only when playing back a tape with cassette memory (p. 72).

(1) Set CM SEARCH to ON in the menu system (P. 25).

(2) Press SEARCH MODE on the Remote Commander repeatedly, until the photo search indicator appears.

(3) Press ⏮ or ⏭ to select the photo.

The photo of the selected date appears automatically.



Searching for a photo – photo search/photo scan

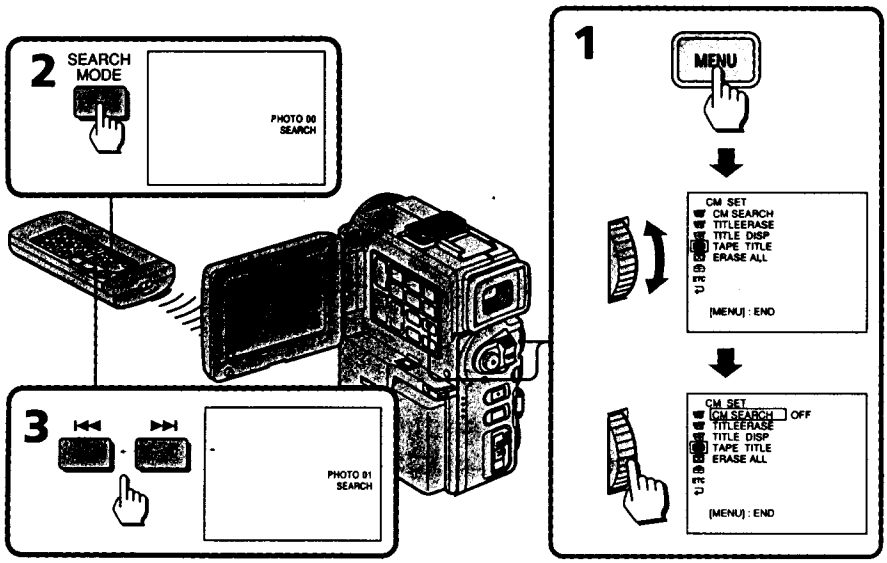
To stop searching
Press ■.

Note
When you play back a tape which has a blank portion in the recorded portions, the Photo Search function will not work correctly.

Searching for a photo without using cassette memory

You can use this function whether the tape has cassette memory or not.

(1) Set CM SEARCH to OFF in the menu system (P. 25).
(2) Press SEARCH MODE on the Remote Commander repeatedly, until the photo search indicator appears.
(3) Press ⏮ or ⏭ to select the photo for playback. Each time you press ⏮ or ⏭, the camcorder searches for the previous or next scene.
The selected photo appears automatically.



To stop searching
Press ■.

Searching for a photo – photo search/photo scan

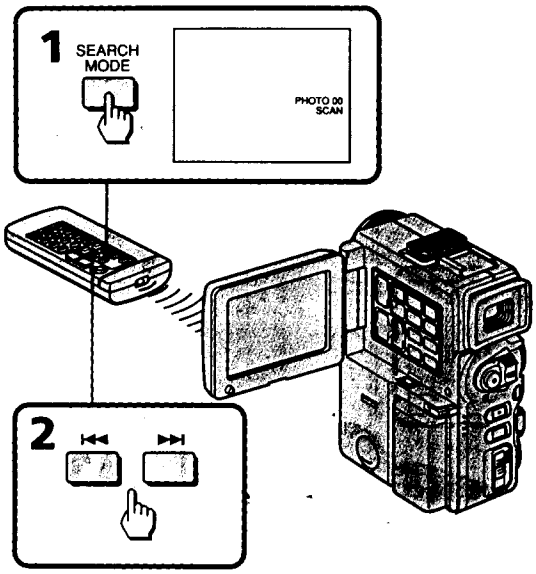
Scanning photo

You can use this function whether the tape has cassette memory or not.

(1) Press SEARCH MODE on the Remote Commander repeatedly until the photo scan indicator displayed on the LCD screen.

(2) Press ⏮ or ⏭.

Each photos are played back for about 5 seconds automatically.



To stop scanning

Press ■.

Returning to a pre-registered position

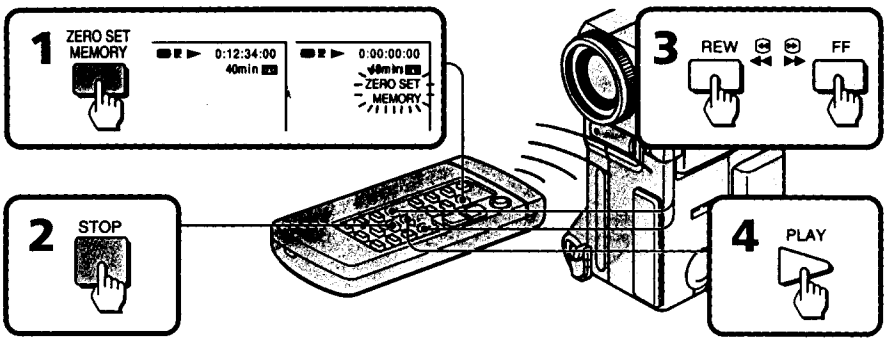
Using the Remote Commander, you can easily go back to the desired point on a tape after playback.

(1) During playback, press ZERO SET MEMORY at the point you later want to locate. The counter shows "0:00:00" and "ZERO SET MEMORY" appears on the LCD screen or in the viewfinder.

(2) Press ■ when you want to stop playback.

(3) Press ◀◀ to rewind or press ▶▶ to fast-forward the tape to the counter's zero point. The tape stops automatically when the counter reaches approximately zero. "ZERO SET MEMORY" disappears and the time code appears.

(4) Press ►.



Note on the tape counter

There may be a discrepancy of several seconds from the time code.

Notes on ZERO SET MEMORY

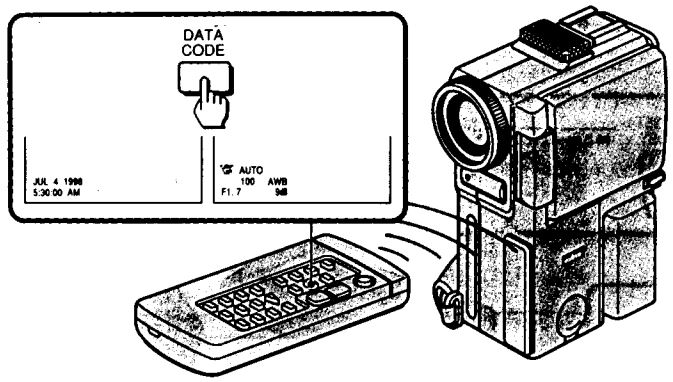
- When you press ZERO SET MEMORY, the counter's zero point is memorized. Press ZERO SET MEMORY again before step 3 to cancel the memory .
- ZERO SET MEMORY may not function when there is a blank portion between pictures on a tape.
- ZERO SET MEMORY functions also in recording standby mode.

Displaying recording data – data code function

You can display recording data (date/time or various settings when recorded) on the LCD screen or in the viewfinder during playback - Data Code function. When DISPLAY in the menu is set to V-OUT/LCD, the Data Code is also displayed on the TV.

You can only operate with the Remote Commander.

Press DATA CODE on the Remote Commander during playback.



To select the items to display

Set DATA CODE in the menu system, and select the following items:

When DATE/CAM is selected: date/time → various settings (Steady Shot, white balance, gain, shutter speed, aperture value) → no indicator.

When DATE is selected: date/time → no indicator.

When bars (-- -- --) appear

- A blank portion of the tape is being played back.
- The tape was recorded by a camcorder without having date and time set.
- The tape is unreadable due to tape damage or noise.

Editing onto another tape

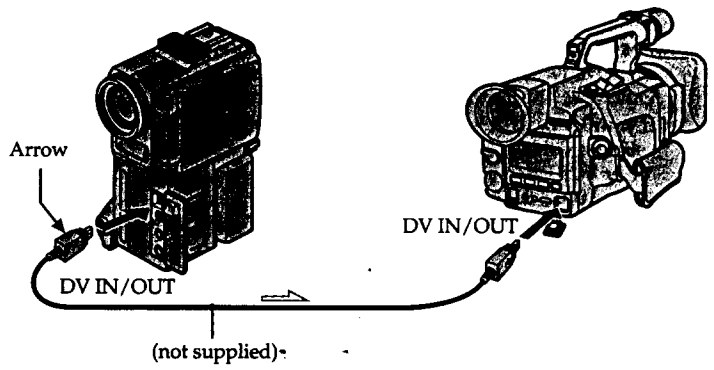
You can create your own video program by editing with any other DV, mini DV, 8 mm, Hi8, VHS, S-VHS, VHSC, S-VHSC, Betamax or ED Betamax VCR that has audio/video inputs. You can edit with little deterioration of picture and sound quality when using the DV connecting cable.

Before editing

Connect the camcorder to the VCR using the VMC-2DV/4DV DV connecting cable (not supplied) or the supplied A/V connecting cable.

Using the DV connecting cable

Simply connect the VMC-2DV/4DV DV connecting cable (not supplied) to DV IN/OUT and to DV IN/OUT of the DV products. With digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing.



: Signal flow

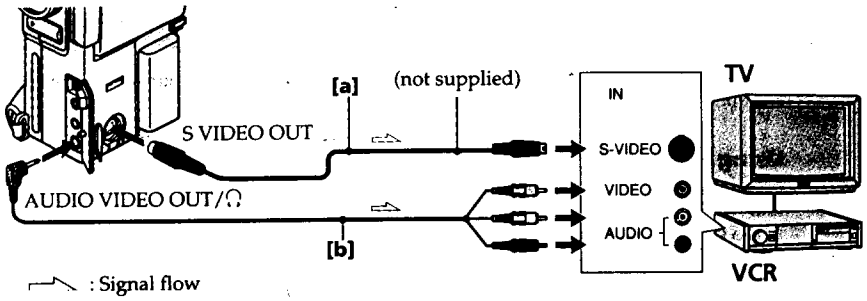
Notes on editing when using the DV connecting cable

- You can connect one VCR only.
- You can record picture, sound and system data at the same time on the DV products by using the DV connecting cable only.
- You cannot edit the titles, display indicator, or the contents of cassette memory.
- If you record playback pause picture via the DV jack, the recorded picture becomes rough. And when you playback the picture using the other video equipments, the picture may jitter.
- You cannot use the functions using the DIGITAL EFFECT button.
- You can also use the camcorder as a recorder with this connection. In this case, "DV IN" indicator appears on the screen.
- When using this camcorder as a recorder, only the recording buttons on the Remote Commander can be used. Press both red and black buttons simultaneously. When using this camcorder as a recorder, the pictures on a monitor may be uneven, however, these on the LCD screen, in the viewfinder or recorded pictures are not affected.

Editing onto another tape

Using the A/V connecting cable [b] or S video connecting cable (not supplied) [a]

Set the input selector on the VCR to LINE.



: Signal flow

Notes on editing when using the A/V connecting cable

- Press DATA CODE, SEARCH MODE, or DISPLAY to turn off the display indicators. Otherwise, the indicators will be recorded on the tape.
- If your TV or VCR is a monaural type, connect the yellow plug of the A/V connecting cable for video to the TV or VCR. Connect only the white or red plug for audio to the TV or VCR. If you connect the white plug, the sound is L (left) signal. If you connect the red plug, the sound is R (right) signal.
- You can edit precisely by connecting a LANC cable (not supplied) to this camcorder and other video equipment having fine synchro-editing function, using this camcorder as a player.

Starting editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.

(2) Play back the recorded tape on the camcorder until you locate the point just before where you want to start editing, then press ❚❚ to set the camcorder in playback pause mode.

(3) On the VCR, locate the recording start point and set the VCR in recording pause mode.

(4) First press ❚❚ on the camcorder, and after a few seconds press ❚❚ on the VCR to start editing.

To edit more scenes

Repeat steps 2 to 4.

To stop editing

Press ■ on both the camcorder and the VCR.

Replacing recording on a tape – insert editing

You can insert a new scene from a VCR onto your originally recorded tape by specifying starting and ending points.

Connection is the same as in "Using the DV connecting cable" on page 67. In recording and recording pause mode, DV IN/OUT jack automatically works as input jack.

You can only operate with Remote Commander.

(1) While pressing the small green button on the POWER switch, set it to VTR.

(2) On the VCR, locate the start just before point to be inserted and set to playback pause mode.

(3) On the camcorder, press ► to set it to playback mode, and then locate the point where the insert should end by pressing ◄◄ or ►►. Then press ❚❚ to set it to playback pause mode.

(4) Press ZERO SET MEMORY on the Remote Commander. The ZERO SET MEMORY indicator flashes and the end point of the insert is stored in memory.

(5) On the camcorder, locate the point where the insert should begin by pressing ◄◄, then press ● REC on the Remote Commander to set it to recording pause mode.

(6) First press ❚❚ on the VCR, and after a few seconds press ❚❚ on the camcorder to start insert editing.

The insert editing stops automatically near the counter's zero point. Press ■ to set the camcorder to stop mode.

To change the end point

Press ZERO SET MEMORY on the Remote Commander so that the ZERO SET MEMORY indicator disappears and begin from step 3.

To record without setting the end point

Skip steps 3 and 4. Press ■ when stopping insert editing.

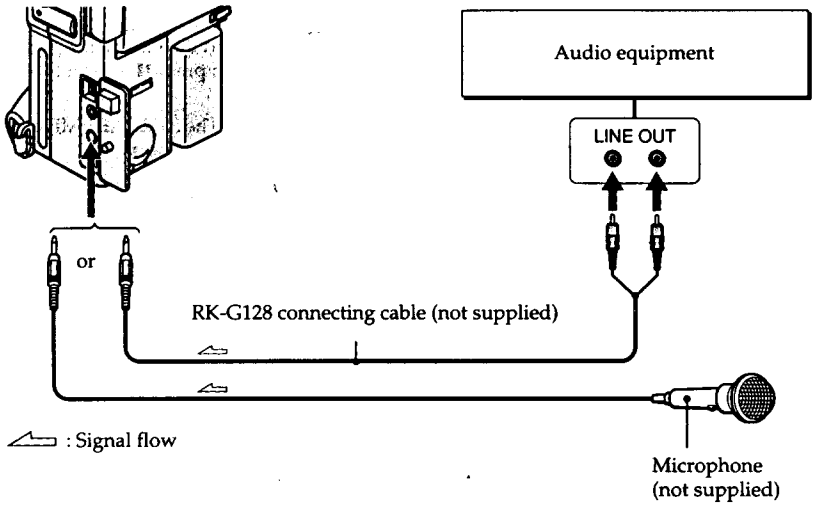
Notes on the inserted picture

- The picture may be distorted at the end of the inserted portion when it is played back.
- The picture and sound recorded on the portion where you insert a new scene will be erased when you insert a new scene.
- If you insert a new scene (picture and sound) on a tape recorded by other camcorder (including DCR-PC1), the picture and sound quality may become worse.

Audio dubbing

You can record an audio sound to add to the original sound on a tape by connecting audio equipment or a microphone. If you connect the audio equipment, you can add a sound on your recorded tape by specifying starting and ending points. The original sound will not be erased.

Connect the audio equipment using the RK-G128 connecting cable (not supplied) or a microphone (not supplied).



Note

You can check the recorded sound connecting the AUDIO VIDEO OUT/🎧 (headphones) jack to headphones.
The recorded sound is not output from the speaker. Check the sound by using headphones.

Notes on audio dubbing

- A new sound cannot be recorded on a tape already recorded in the 16BIT mode (32 kHz, 44.1 kHz or 48 kHz).
- When an external microphone is not connected, the recording will be made through the built-in microphone of the camcorder.
- A new sound cannot be recorded on a tape already recorded in the LP mode.
- If you add a new sound on a tape recorded with another camcorder (including another DCR-PC1), the sound quality may deteriorate.
- Remove the AV connecting cable from the camcorder. If not removed, audio dubbing is not possible.

Audio dubbing

Adding an audio sound on a recorded tape

(1) Insert your recorded tape into the camcorder.

(2) While pressing the small green button on the POWER switch, set it to VTR.

(3) On the camcorder or Remote Commander, locate the point where the recording should begin by pressing ◀◀ or ▶▶. Then press ❚❚ to set it to playback pause mode.

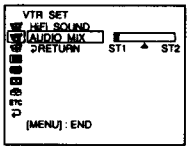
(4) Press AUDIO DUB on the Remote Commander. ⏺❚❚ (green) mark appears in the viewfinder or on the LCD screen.

(5) Press ❚❚ on the camcorder or Remote Commander and at the same time start playing back the audio you want to record. The new sound will be recorded in stereo 2. The recorded sound in stereo 1 is not heard. While adding an audio sound, ⏺ (red) mark appears in the viewfinder or on the LCD screen.

(6) Press ■ on the camcorder or Remote Commander at the point where you want to stop recording.

To play back the new recorded sound

Adjust the balance between the original sound (ST1) and the new sound (ST2) by selecting AUDIO MIX in the menu system.



Notes on AUDIO MIX

Five minutes after when you disconnect the power source or remove the battery pack, the settings of AUDIO MIX return to the original sound (ST1) only. The factory setting is original sound only.

To end audio mixing more precisely

First playback the tape and press ZERO SET MEMORY on the Remote Commander at the point where you want to stop audio mixing. Then start recording from step 2. The recording stops automatically at the point where you pressed ZERO SET MEMORY.

Additional information

Usable cassettes and playback modes

Selecting cassette types

You can use the mini DV mini DV cassette only. You cannot use any other DV, 8 mm, Hi8 Hi8, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC , Betamax or ED Beta ED Betamax cassette.

We recommend mini DV cassette with cassette memory.

There are two types of mini DV cassettes: with cassette memory and without cassette memory. We recommend you to use the tape with cassette memory. The IC memory is mounted on this type of mini DV cassette. This camcorder can read and write data such as dates of recording or titles, etc. to this memory. The functions using the cassette memory require successive signals recorded on the tape. If the tape has a blank portion in the recorded portions, a title may not be displayed properly or the search functions may not work properly. Not to make any blank portion on the tape, operate the followings.

Press END SEARCH to go to the end of the recorded portion before you begin the next recording if you operate the followings:

- you have ejected the cassette while recording.
- you have played back the tape in the VTR mode.

If there is a blank portion or discontinuous signal on your tape, re-record from the beginning to the end of the tape concerning above.

The same result may occur when you record using a digital video camera recorder without a cassette memory function on a tape recorded by one with the cassette memory function.

Tapes with cassette memory have CM (Cassette Memory) mark. Sony recommends that you use a tape having CM mark to enjoy this camcorder fully.

When you play back

Copyright signal

When playing back

Using any other video camera recorder, you cannot record on a tape that has recorded a copyright control signals for copyright protection of software which is played back in this camcorder.

When recording

Using this camcorder, you cannot record software that has recorded a copyright control signals for copyright protection of software.

"COPY INHIBIT" appears on the LCD screen, in the viewfinder or on the TV screen if you try to record such software.

Audio mode

12BIT mode: The original sound can be recorded in stereo 1, and the new sound in stereo 2. The balance between stereo 1 and stereo 2 can be adjusted by selecting AUDIO MIX in the menu system during playback. Both sounds can be played back.

16BIT mode: A new sound cannot be recorded but the original sound can be recorded in high quality.

Notes on the mini DV cassette

To prevent accidental erasure

Slide out the protect tab on the cassette so that the red portion is visible. **[a]**

When affixing a label on the mini DV cassette

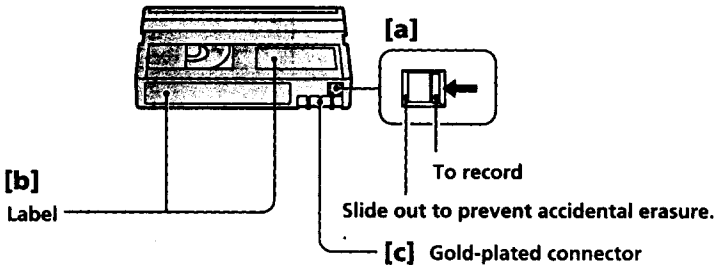
Be sure to affix a label on only the location as illustrated below so as not to cause malfunction of the camcorder. **[b]**

After using the mini DV cassette

Rewind the tape to the beginning, put the cassette in its case, and store it in an upright position.

Note on gold-plated connector

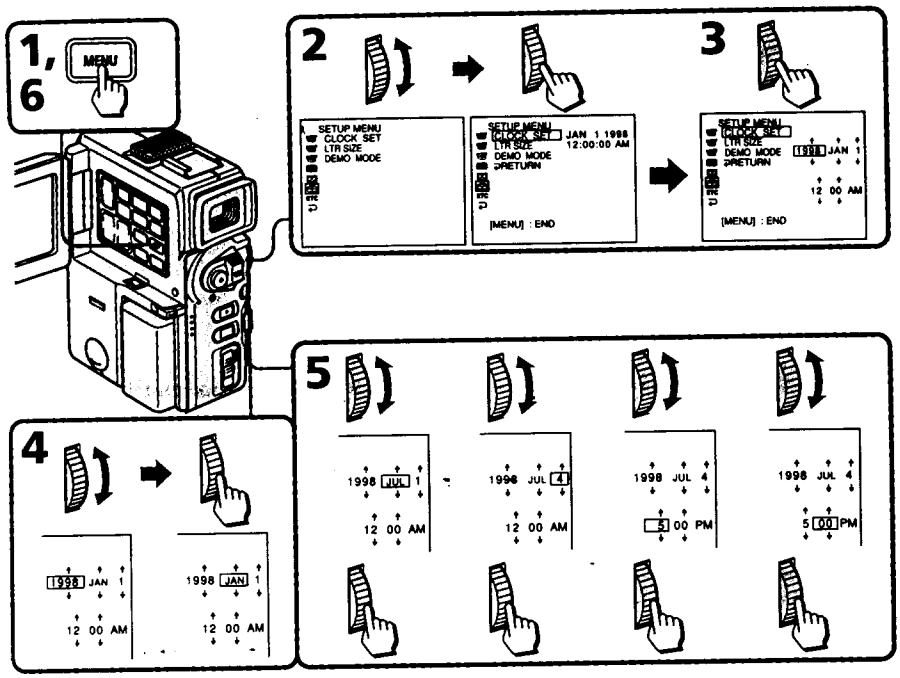
If the gold-plated connector of mini DV cassettes is dirty or dusty, you may not operate the function using cassette memory. Clean up the gold-plated connector with cotton-wool swab, about every 10 times ejection of a cassettes. **[c]**



Resetting the date and time

The date and time are set at the factory. Set the time according to the local time in your country.

(1) Press MENU to display the menu on the LCD screen.
(2) Turn the control dial to select 🧰, then press the control dial.
(3) Select CLOCK SET, then press the control dial.
(4) Turn the control dial to adjust the year, and then press the control dial.
(5) Set the month, day, hour and minutes by turning and pressing the control dial.
(6) Press MENU to erase the menu display.



To correct the date and time setting

Repeat the above procedure.

Resetting the date and time

About the lithium battery

Your camcorder is supplied with a rechageable lithium battery installed so as to retain the date and time, etc., regardless of the setting of the POWER switch. The lithium battery is always charged as long as you are using the camcorder. The battery, however, will get discharged gradually if you do not use the camcorder. It will be completely discharged in about 4 monthes if you do not use the camcorder at all. Even if the lithium battery is not charged, it will not affect the camcorder operation. To retain the date and time, etc., charge the battery if the battery is discharged. The following are charging methods:

- Connect the camcorder to a wall outlet using the supplied AC power adaptor, and leave the camcorder with the POWER switch turned off for more than 24 hours.
- Or, install the fully charged battery pack in the camcorder, and leave the camcorder with the POWER switch turned off for more than 24 hours.

The year indicators changes as follows:

1998 → 1999 → ... 2000 ... → 2029

Note on the time indicator

The internal clock of this camcorder operates on a 12-hour cycle.

- 12:00 AM stands for midnight.
- 12:00 PM stands for noon.

Simple setting of clock by time difference

You can easily set the clock for a local time by a time difference in the menu system.

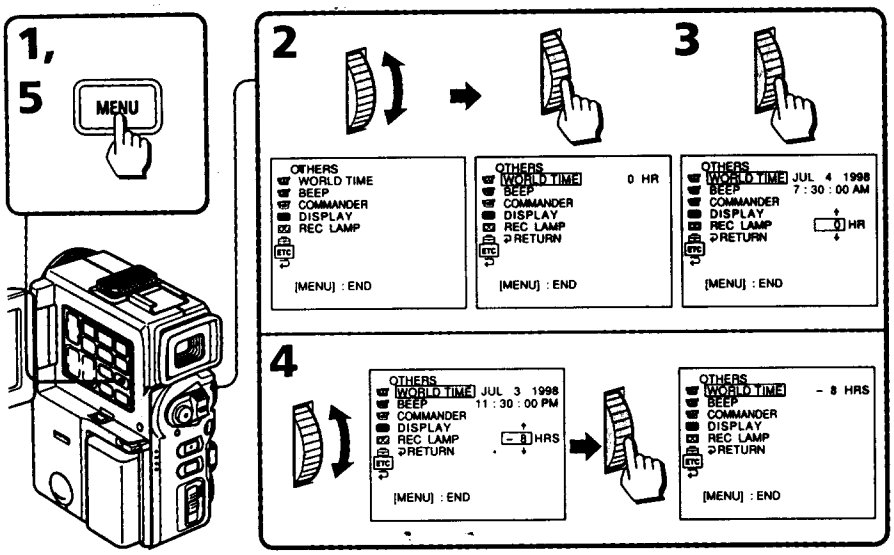
(1) Press MENU to display the menu on the LCD screen.

(2) Turn the control dial to select **ETC**, then press the control dial.

(3) Turn the control dial to select WORLD TIME, then press the control dial.

(4) Turn the control dial to set a time difference, then press the control dial. The hour of clock changes in relation to a time difference which you set.

(5) Press MENU to erase the menu display.



Note on WORLD TIME

If the time is not set, WORLD TIME dose not work.

Tips for using the battery pack

Notes on the "InfoLITHIUM" Battery Pack

What is the "InfoLITHIUM" battery pack

The "InfoLITHIUM" battery pack is a lithium battery pack which can exchange data with compatible video equipment about its battery consumption.

When you use this battery pack with video equipment having the (i) *InfoLITHIUM* mark, the video equipment will indicate the remaining battery time in minutes.*

* The indication may not be accurate depending on the condition and environment which the equipment is used under.

How the battery consumption is displayed

The power consumption of the camcorder changes depending on its use, such as whether the LCD is used or not, how the autofocusing is working on or not.
While checking the condition of the camcorder, the "InfoLITHIUM" battery pack measures the battery consumption and calculates the remaining battery power. If the condition changes drastically, the remaining battery indication may suddenly decrease or increase by more than 2 minutes.
Even if 5 to 10 minutes is indicated as the battery remaining time on the LCD screen or in the viewfinder, the ⌧ indicator may also flash under some conditions.

To obtain more accurate remaining battery indication

Set the camcorder to recording standby mode and point towards a stationary object. Do not move the camcorder for 30 seconds or more.

- If the indication seems incorrect, use up the battery and then recharge it fully (Full charge[1]). Note that if you have used the battery in a hot or cold environment for long time, or you have repeated charging many times, the battery may not be able to show the correct time even after being fully charged.
- After you have used the "InfoLITHIUM" battery pack with an equipment not having the (i) *InfoLITHIUM* mark, make sure that you use up the battery on the equipment having the (i) *InfoLITHIUM* mark and then recharge fully.

Why the remaining battery indication does not match the continuous recording time in the operating instructions

The recording time is affected by the environmental temperature and conditions. The recording time becomes very short in a cold environment. The continuous recording time in the operation manual is measured under the condition of using a fully charged (or normal charged[2]) battery pack in 77 °F (25 °C). As the environmental temperature and condition are different when you actually use the camcorder, the remaining battery time is not same as the continuous recording time in the operating instructions.

[1] Full charge: Charging for about 1 hour after the charge lamp of the AC power adaptor goes off.

[2] Normal charge: Charging just until the charge lamp of the AC power adaptor goes off.

Tips for using the battery pack

Notes on charging

A brand-new battery pack

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Recharge the battery pack whenever you like

You do not have to discharge it before recharging. If you charged the battery pack fully but you did not use it for a long time, it becomes discharged. Then recharge the battery pack before use.

Notes on the terminals

If the terminals (metal parts on the back) are not clean, the battery charge duration will be shortened.

When the terminals are not clean or when the battery pack has not been used for a long time, repeatedly install and remove the battery pack a few times. This improves the contact condition. Also, wipe the +, – and C terminals with a soft cloth or paper.

Be sure to observe the following

- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor try to disassemble the battery pack.
- Do not expose the battery pack to any mechanical shock.

Tips for using the battery pack

This section shows you how you can get the most out of your battery pack.

Preparing the battery pack

Always carry additional batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is shorter in a cold environment

Battery efficiency is decreased, and the battery will be used up more quickly, if you are recording in a cold environment.

To save battery power

Do not leave the camcorder in Standby mode when not recording to save the battery power.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking at the LCD screen or through the viewfinder, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

When to replace the battery pack

While you are using your camcorder, the remaining battery indicator on the LCD screen or in the viewfinder decreases gradually as battery power is used up.
The remaining time in minutes also appears.



When the remaining battery indicator reaches the lowest point, the indicator appears and starts flashing on the LCD screen or in the viewfinder.
When the indicator changes from slow flashing to rapid flashing while you are recording, set the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack has been replaced.

Tips for using the battery pack

Notes on the rechargeable battery pack

Caution

Never leave the battery pack in temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.

The battery pack heats up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern, and is normal.

Battery pack care

- **Remove the battery pack from the camcorder after using it,** and keep it in a cool place. When the battery pack is installed to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF. This shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery pack right before using the camcorder.

The life of the battery pack

If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature

You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C). Lower temperatures require a longer charging time.

Maintenance information and precautions

Moisture condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. Take the following precautions.

Inside the camcorder

If there is moisture inside the camcorder, the beep sounds and the ⚿ indicator flashes. If this happens, none of the function except cassette ejection will work. Open the cassette compartment, turn off the camcorder, and leave it about 1 hour. When ⏏ indicator flashes at the same time, the cassette is inserted in the camcorder. Eject the cassette, turn off the camcorder, and leave also the cassette about 1 hour.

On the lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to prevent moisture condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.

(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

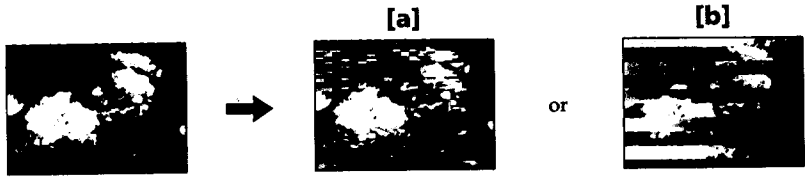
Maintenance information and precautions

Video head cleaning

To ensure normal recording and clear pictures, clean the video heads.

The video heads may be dirty when:

- mosaic-pattern noise appears on the playback picture
- playback pictures do not move
- playback pictures are hardly visible
- playback pictures do not appear
- the ⊗ indicator and "CLEANING CASSETTE" message appear one after another or the ⊗ indicator flashes on the LCD screen or in the viewfinder.



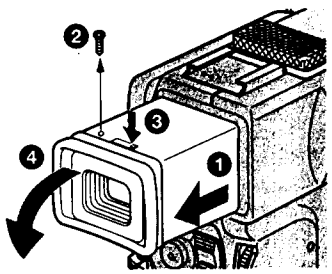
If **[a]** or **[b]** happens, clean the video heads with the Sony DVM12CL cleaning cassette (not supplied). Check the picture and if the above problem persists, repeat cleaning. (Do not repeat cleaning more than 5 times in one session.)

Note

If the DVM12CL cleaning cassette (not supplied) is not available in your area, consult your nearest Sony dealer.

Removing dust from inside the viewfinder

(1) Pull out the viewfinder ❶.
Remove the screw ❷ with a screwdriver (not supplied).
While pressing the right side of the catch ❸ using a sharp-pointed object, remove the eyecup ❹.



(2) Remove dust from inside the eyecup and viewfinder with a commercially available blower.

(3) In the reverse way of **(1)**, attach the execup. Then replace the screw ❷.

Maintenance information and precautions

Precautions

Camcorder operation

- Operate the camcorder on 3.6 V (battery pack) or 4.2 V (AC power adaptor).
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not push the LCD screen.
- If the camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a mulfunction.
- While using the camcorder, the back of the LCD screen may heat up. This is not a mulfunction.

On handling tapes

- Do not insert anything in the small holes on the cassette.
- Do not open the tape protect cover or touch the tape.
- Avoid touching or damaging the terminals. To remove dust, clean the terminals with a soft cloth.

Camcorder care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the cassette. Periodically turn on the power, operate the camera and VTR sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction, and sometimes this malfunction cannot be repaired.

Maintenance information and precautions

AC power adaptor

Charging

- Use only a lithium ion type battery pack.
- Place the battery pack on a flat surface without vibration during charging.
- The battery pack will get hot during charging. This is normal.

Others

- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the power cord, pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
 - Extremely hot or cold
 - Dusty or dirty
 - Very humid
 - Vibrating

Note on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following.

- Be sure to insert the batteries in the correct direction.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- The batteries slowly discharge while not in use.
- Do not use a battery that is leaking.

If battery leakage occurred

- Wipe off the liquid in the battery case carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

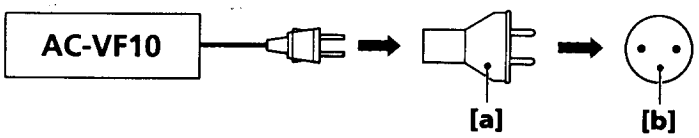
If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Using your camcorder abroad

Each country or area has its own electric and TV color systems. Before using your camcorder abroad, check the following points.

Power sources

You can use your camcorder in any country or area with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz. Use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Difference in color systems

This camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system-based TV.
Check the following list.

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system
Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

SECAM system
Bulgaria, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Trouble check

If you run into any problem using the camcorder, use the following table to troubleshoot the problem. Should the difficulty persist, disconnect the power source and contact your Sony dealer or local authorized Sony service facility.

Camcorder

Power

Symptom	Cause and/or corrective actions
The power is not on.	• The battery pack is not installed. → Install the battery pack. (p. 9) • The battery is dead. → Use a charged battery pack. (p. 7) • The AC power adaptor is not connected to a wall outlet. → Connect the AC power adaptor to a wall outlet. (p. 24)
The power goes off.	• While being operated in CAMERA mode, the camcorder has been in Standby mode for more than 5 minutes. → Set the POWER switch to OFF, then to CAMERA. (p. 11) • The battery is dead. → Use a charged battery pack. (p. 7)
The battery pack is quickly discharged.	• The ambient temperature is too low. (p. 77) • The battery pack has not been charged fully. → Charge the battery pack again. (p. 7) • The battery pack is completely dead, and cannot be recharged. → Use another battery pack. (p. 24)
The battery pack cannot be installed.	• Only an NP-F10/NP-F20/NP-F30 battery pack can be used.

Operation

Symptom	Cause and/or corrective actions
START/STOP does not operate.	• The tape is stuck to the drum. → Eject the cassette. (p. 10) • The tape has run out. → Rewind the tape or use a new one. (p. 21) • The POWER switch is set to VTR. → Set it to CAMERA. (p. 11) • The tab on the cassette is out (red). → Use a new cassette or slide the tab. (p. 10)
The cassette cannot be removed from the holder.	• The battery is dead. → Use a charged battery pack or the AC power adaptor. (p. 7, 24)
⏏ and ⏏ indicators flash and no function except for cassette ejection works.	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 81)
"CLOCK SET" appears when the camcorder is turned on.	• Reset the date and time. (p. 74)
The End Search function does not activate.	• You have not recorded on the new cassette yet. • The tape without cassette memory was ejected after recording.

Trouble check

Operation

Symptom	Cause and/or corrective actions
The tape does not move when a tape transport button is pressed.	• The POWER switch is set to CAMERA or OFF. → Set it to VTR. (p. 21) • The tape has run out. → Rewind the tape or use a new one. (p. 21)
No sound or only a low sound is heard when playing back a tape.	• The volume is turned to the minimum. → Open the LCD panel and press VOLUME +. (p. 21) • AUDIO MIX is set to ST2 side in the menu system. → Adjust AUDIO MIX in the menu system (p. 25, 71).
The new sound added to the recorded tape is not heard.	• AUDIO MIX is set to ST1 side in the menu system. → Adjust AUDIO MIX in the menu system (p. 25, 71).
The Steady Shot function does not activate.	• STEADYSHOT is set to OFF in the menu system. → Set it to ON. (p. 25)
Recording stops in a few seconds.	• The START/STOP MODE switch is set to **5SEC** or ⊥ ANTI GROUND SHOOTING. → Set it to 𝌆. (p. 15)
The autofocus function does not activate.	• Focus is set to the manual mode. → Set it to autofocus. (p. 48) • Shooting conditions are not suitable for autofocus. → Set focus to manual mode to focus manually. (p. 48)
The fader function does not work.	• The START/STOP MODE switch is set to **5SEC** or ⊥ ANTI GROUND SHOOTING. → Set it to 𝌆. (p. 15) • The digital effect function is working. → Cancel it. (p. 37)
The title is not displayed.	• TITLE DISP is set to OFF in the menu system. → Set it to ON in the menu system. (p. 25)
The title is not recorded.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 50) • The cassette memory is full. → Erase another title. (p. 52) • The tape is set to prevent accidental erasure. → Slide the protect tab so that red portion is not visible. (p. 10) • Nothing is recorded in that position on the tape. → Superimpose the title to the recorded position. (p. 50)
The cassette label is not recorded.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 55) • The cassette memory is full. → Erase some titles. (p. 52) • The tape is set to prevent accidental erasure. → Slide the protect tab so that red portion is not visible. (p. 10)
Displaying the recorded date, date search function does not work.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 59) • CM SEARCH is set to OFF in the menu system. → Set it to ON. (p. 25)

Continued to the next page

Trouble check

Operation

Symptom	Cause and/or corrective actions
The title search function does not work.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 61) • CM SEARCH is set to OFF in the menu system. → Set it to ON. (p. 25) • There is no title in the tape. → Superimpose the titles. (p. 50)
CM indicator does not appear when using a tape with cassette memory.	• The gold-plated connector of the tape is dirty or dusty. → Clean the gold-plated connector. (p. 73)
The Date Search, Title Search, or End Search does not work correctly.	• The tape has a blank portion in the recorded portion. (p. 72)

Picture

Symptom	Cause and/or corrective actions
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens. (p. 12)
The picture is not clear or does not appear.	• The television's video channel is not adjusted correctly. → Adjust it.
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	• The contrast between the subject and background is too high. The camcorder is not malfunctioning. → Change locations.
The picture is "noisy" or does not appear.	• The video heads may be dirty. → Clean the heads using the Sony DVM12CL cleaning cassette (not supplied). (p. 82)
⊗ indicator flashes on the LCD screen or in the viewfinder.	• The video heads may be dirty. → Clean the heads using the Sony DVM12CL cleaning cassette (not supplied). (p. 82)
The picture is too bright or too dark.	• LCD BRIGHT is not adjusted properly. → Press + or – to obtain the brightness you want. (p. 16) • The exposure adjustment is set to manual mode. → Set it to aumomatic exposure mode. (p. 44)
A vertical band appears when shooting a very bright subject.	• The camcorder is not malfunctioning.
A horizontal band appears when shooting a TV screen or computer screen.	• Set STEADYSHOT in the menu system to OFF. (P. 25)
The picture does not appear in the viewfinder.	• The LCD panel is open. → Close the LCD panel. • The viewfinder is not fully pulled out. → Pull it out until it clicks. (p. 11)
The picture does not appear on the LCD screen or in the viewfinder.	• The picture disappears when you insert or eject a cassette. (The power lamp flashes.) The camcorder is not malfunctioning.
An unknown picture is displayed on the LCD screen or in the viewfinder.	• If 10 minutes elapse after you set the POWER switch to CAMERA without inserting a cassette, the camcorder automatically starts the demonstration or DEMO MODE is set to STBY/ON in the menu system. → Insert the cassette and the demonstration stops. You can deactivate the demonstration. (p. 28)

Trouble check

Picture

Symptom	Cause and/or corrective actions
The picture appears a little later on the LCD screen or in the viewfinder when you set the POWER switch to CAMERA.	• The camcorder is not malfunctioning.
A display such as "C:□□:□□" appears on the LCD screen or in the viewfinder.	• The self-diagnosis display function has activated. → Check the code and diagnosis the problem by refering to the code chart. (p. 91)

Others

Symptom	Cause and/or corrective actions
While editing using the DV connecting cable, recording picture cannot be monitored.	• Remove the DV connecting cable, and connect it again.
The camcorder becomes warm.	• If the power of the cammcorder is on for a long time, it becomes warm, which is not malfunction.
The supplied Remote Commander does not work.	• COMMANDER is set to OFF in the menu system. → Set it to ON. (p. 25) • Something is blocking the infrared rays. → Remove the obstacle. • The battery is not inserted with the correct polarity. → Insert the battery with the correct polarity. (p. 99) • The batteries are dead. → Insert new ones. (p. 99)
No function works though the power is on.	• Disconnect the battery pack or the connecting plate of the AC power adaptor, then reconnect it after about 1 minute. Turn the power on. If the functions still do not work, press the RESET button at the upper right from the START/STOP MODE switch using a sharp-pointed object. (If you press the RESET button, all the settings including the date and time return to the default.) (p. 96)

AC power adaptor

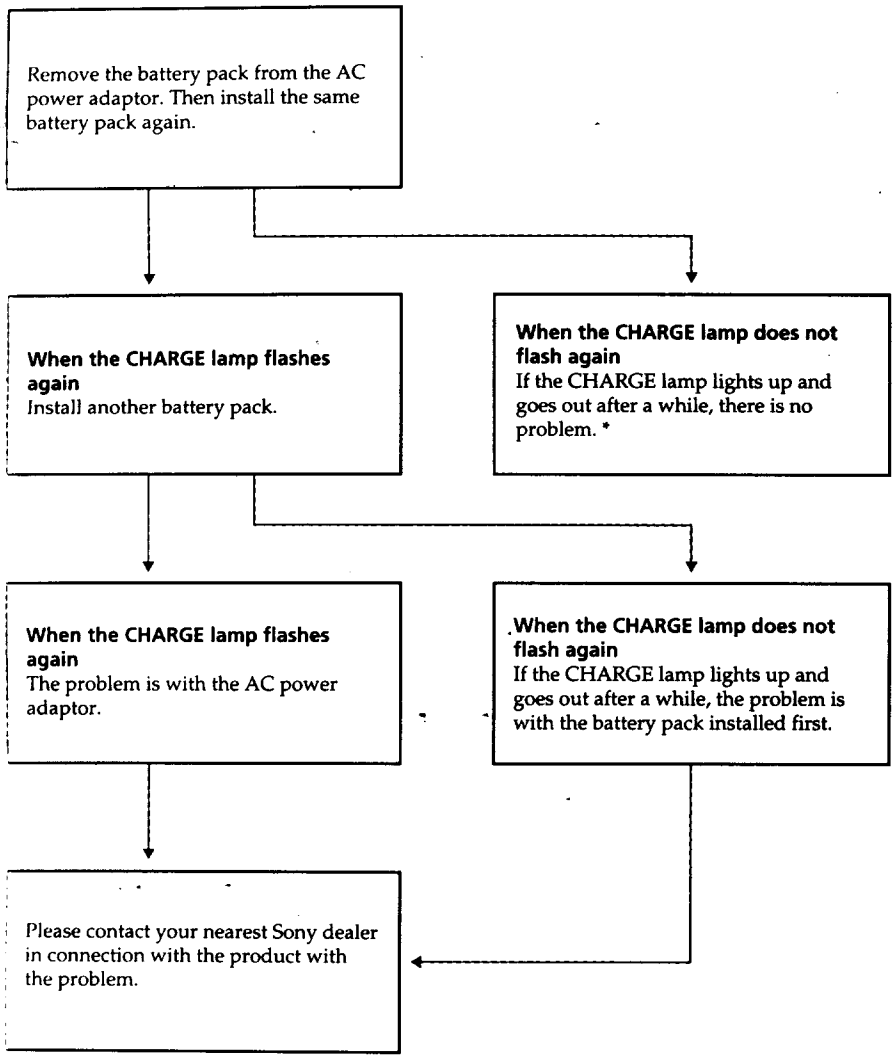
Symptom	Corrective actions
The VTR/CAMERA or CHARGE lamp does not light.	• Disconnect the power cord. After about 1 minute, reconnect the power cord. (p. 7)
The CHARGE lamp flashes.	• See the chart on the next page.

Continued to the next page

Trouble check

When the CHARGE lamp flashes

Check through the following chart.

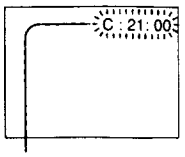


* If you use a battery pack which you have just bought or which has been left unused for a long time, the CHARGE lamp may flash at the first charging. This does not indicate a problem. Repeat again to charge with same battery pack.

Self-diagnosis function

The camcorder has a self-diagnosis display. This function displays the camcorder's condition with five digits (a combination of a letter and figures) on the LCD screen or in the viewfinder. If this occurs, check the following code chart. The five-digit display informs you of the camcorder's current condition. The last two digits (indicated by □□) will differ depending on the state of the camcorder.

LCD screen/viewfinder



Self-diagnosis display

- C:□□:□□
 You can service the camcorder yourself.
- E:□□:□□
 Contact your Sony dealer or local authorized Sony facility.

Five-digit display	Cause and/or corrective actions
C:21:□□	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 81)
C:22:□□	• The video heads are dirty. → Clean the heads using the Sony DVM12CL cleaning cassette (not supplied). (p. 82)
C:31:□□ C:32:□□	• A serviciable situation not malfunctioned above has occurred. → Remove the cassette and insert it again, then operate the camcorder. (p. 10) → Disconnect the power cord of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate the camcorder.
C:04:□□	• The battery pack being used is not the "InfoLITHIUM" battery pack. → Use the "InfoLITHIUM" battery pack. (p. 24)
E:61:□□ E:62:□□	• A camcorder malfunction which you cannot service has occurred. → Contact your Sony dealer or local authorized Sony service facility and inform them of the five digits. (example: E:61:10)

If you are unable to resolve the problem, contact your Sony dealer or local authorized Sony service facility.

Specifications

Video camera recorder

System

Video recording system
Two rotary heads, Helical scanning system
Audio recording system
Rotary heads, PCM system
Quantization: 12bits (Fs 32kHz, stereo 1, stereo 2), 16bits (Fs 48kHz, stereo)
Video signal
NTSC color, EIA standards
Usable cassette
Mini DV cassette with logo printed
Recording/playback time
SP mode: 1 hour (DVM60)
LP mode: 1.5 hours (DVM60)
Fastforward/rewind time
Approx. 3 min. 30 s (DVM60)
Viewfinder
Electric viewfinder (color)
Image device
CCD (Charge Coupled Device 1/4")
Lens
Combined power zoom lens (Carl Zeiss), 120x (Digital), 10x (Optical)
Focal distance
f = 3.3 to 33 mm
(42 to 420 mm when converted into a 35 mm still camera)
F 1.7 – 2.2
Color temperature
Auto
HOLD, INDOOR 3,200K,
OUTDOOR 5,800K
Minimum illumination
5 lux at F 1.7
Illumination range
5 to 100,000 lux
Recommended illumination
More than 100 lux

LCD screen

Picture
2.5 inches measured diagonally
2 x1 1/2 inches (50.015 x 37.428 mm)
On-screen display
TN LCD/TFT active matrix method
Total dot number
180,000 (800 x 225)

Input and output connectors

S video output
4-pin mini DIN
Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced
Audio Video/Headphones output
Special minijack
V: 1 Vp-p, 75 ohms, unbalanced, sync negative
A: 327 mV (at output impedance more than 47 kilohms)
Output impedance with less than 2.2 kilohms/Headphones:
Stereominijack (ø 3.5 mm)
DV input/output
4-pin connector
MIC input
Stereo minijack (ø 3.5mm) :
0.388mV, DC2.5V
Input impedance 6.8 kilohms
LANC jack
Stereo miniminijack (ø 2.5 mm)

General

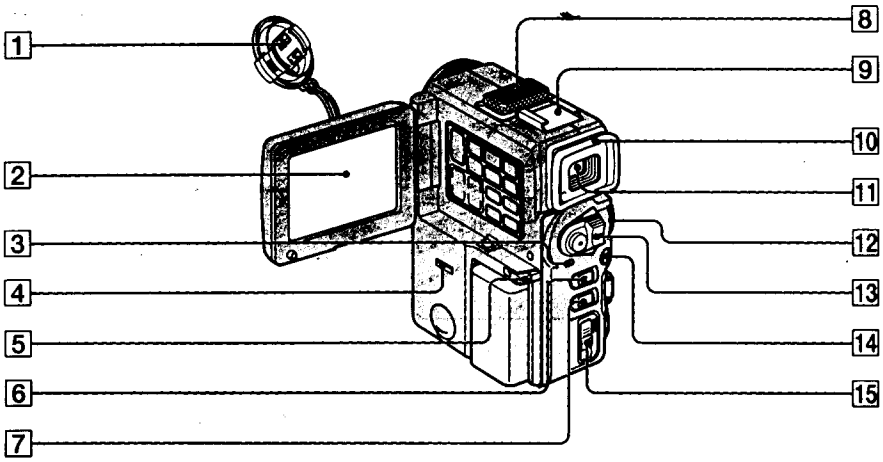
Power requirements
3.6 V (battery insertion input)
Average power consumption
3.2 W during camera recording using viewfinder
4.5 W during camera recording using LCD screen
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
–4°F to 140°F (–20°C to 60°C)
Dimensions
Approx. 2 1/8 x 4 3/4 x 3 3/4 inches (52 x 119 x 92.5 mm) (w/h/d) excluding projecting parts
Mass
Approx. 1 lb. (460 g) excluding the battery pack and the cassette
Approx. 1 lb. 2 oz. (530 g) including the battery pack NP-F10 and cassette DVM60
Microphone
Electret condenser microphone, Stereo type
Speaker
Dynamic speaker
Supplied accessories
See page 6.

AC power adaptor

Power requirements
100 to 240 V AC, 50/60 Hz
Power consumption
4.2 W
Output voltage
DC OUT: 4.2 V, 1.8 A in operating mode
Battery charge terminal: 4.2 V, 1.5 A in charge mode
Application
Sony battery pack NP-F10, NP-F20, NP-F30 lithium ion type
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
–4°F to 140°F (–20°C to 60°C)
Dimensions
Approx. 1 15/16 x 1 9/16 x 3 3/8 inches (49 x 39 x 85 mm) (w/h/d)
Mass
Approx. 4.2 oz. (120 g)

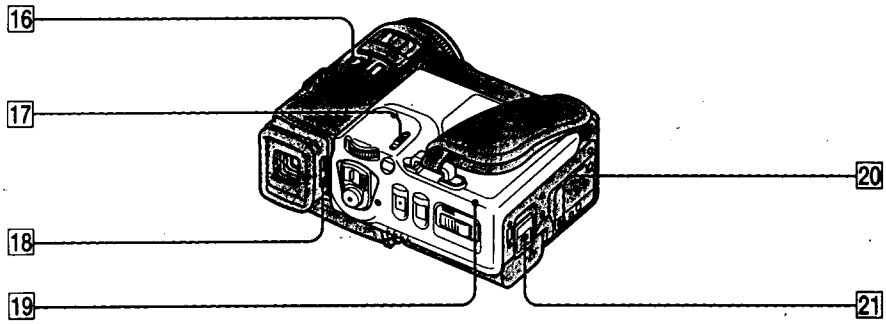
Design and specifications are subject to change without notice.

Identifying the parts



1 **Lens cap** (p. 11)
2 **LCD screen** (p. 16)
3 **Power lamp** (p. 11, 21)
4 **Speaker**
5 **OPEN button** (p. 16)
6 **FADER button** (p. 33)
7 **BACK LIGHT button** (p. 43)
8 **Built-in microphone**
9 **Accessory shoe** (p. 30)
10 **Eyecup**
11 **Viewfinder** (p. 11)
12 **Control dial** (p. 25)
13 **POWER switch** (p. 11, 21)
14 **EXPOSURE button** (p. 44)
15 ⏏ **OPEN/EJECT lever** (p. 10)

Identifying the parts



16 **PHOTO button** (p. 30)

17 **START/STOP MODE swtich** (p. 15)

18 **Viewfinder lens adjustment lever** (p. 12)

19 **Cassette lid** (p. 10)

20 **Tripod receptacle** (p. 19)
Make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm). Otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

21 **BATT(battery) RELEASE lever** (p. 9)

To watch the demonstration

You can watch a brief demonstration of pictures with special effects. If the demonstration appears when you turn on the camcorder for the first time, exit the demo mode to use your camcorder.

To enter demo mode

(1) Eject the cassette and set the POWER switch to VTR.

(2) While holding down ►, set the POWER switch to CAMERA. The demonstration starts. The demonstration stops when you insert the cassette.

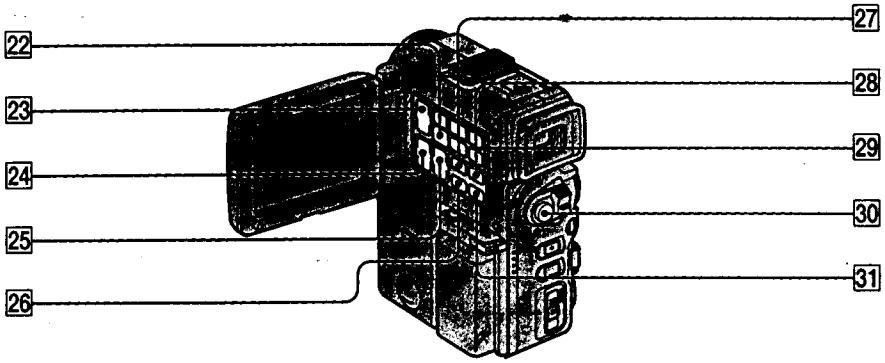
Note that once you enter demo mode, this mode is retained as long as the rechargeable lithium battery is in place. Therefore, demonstration starts automatically 10 minutes later every time you set the POWER switch to CAMERA, and after you eject the cassette.

To exit demo mode

(1) Turn the POWER switch to VTR.

(2) While holding down ■, turn the POWER switch to CAMERA.

Identifying the parts



22 **END SEARCH button** (p. 20, 23)

23 **EDIT SEARCH buttons** (p. 20)

24 **LCD BRIGHT buttons** (p. 16, 21)

25 **VOLUME buttons** (p. 21)

26 **DISPLAY button** (p. 21)

27 **DIGITAL EFFECT button** (p. 37)

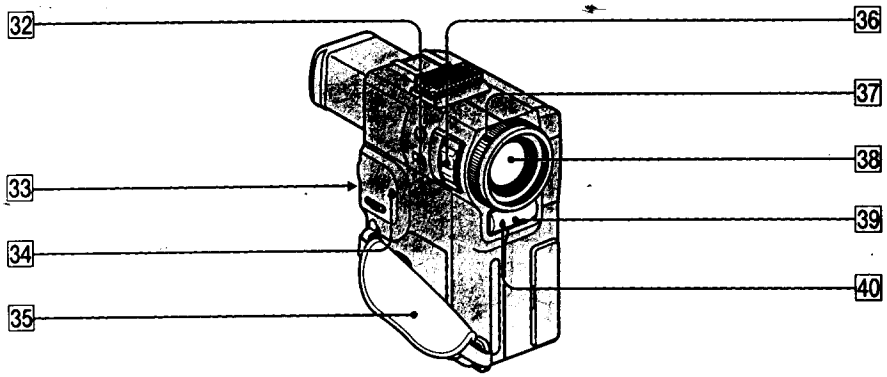
28 **MENU button** (p. 25)

29 **Tape operation buttons** (p. 21)
- ■ **STOP (stop)**
- ◄◄ **REW (rewind)**
- ► **PLAY (playback)**
- ►► **FF (fastforward)**
- ❚❚ **PAUSE (pause)**

30 **START/STOP button** (p. 11)

31 **TITLE button** (p. 50)

Identifying the parts



32 **FOCUS button** (p. 48)

33 **Cassette compartment** (p. 10)

34 **RESET button** (p. 89)

35 **Grip strap** (p. 18)

36 **Zoom lever** (p. 14)

37 **Focus ring** (p. 48)

38 **Lens**

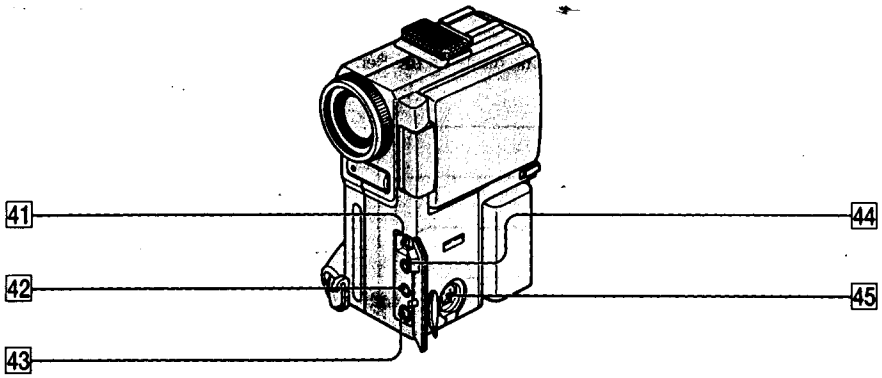
39 **Remote sensor** (p. 99)
Aim the Remote Commander here for remote control.

40 **Recording lamp** (p. 11)

About the Carl Zeiss lens
This camcorder is equipped with a Carl Zeiss lens which can reproduce a fine image.
The lens for this camcorder was developed jointly by Carl Zeiss, in Germany, and Sony Corporation. It adopts the MTF* measurement system for video camera and offers a quality as the Carl Zeiss lens.

* MTF is an abbreviation of Modulation Transfer Function/Factor.
The value number indicates the amount of light of a subject penetrating into the lens.

Identifying the parts



41 **DV IN/OUT jack** (p. 67)

This "i.LINK" mark is a trademark of Sony Corporation and indicates that this product is in agreement with IEEE 1394-1995 specifications and their revisions.

The DV IN/OUT jack is i.LINK compatible.

42 **MIC jack (PLUG IN POWER)** (p. 70)
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

43 **AUDIO VIDEO OUT/🎧 (headphones) jack** (p. 21, 57, 68)

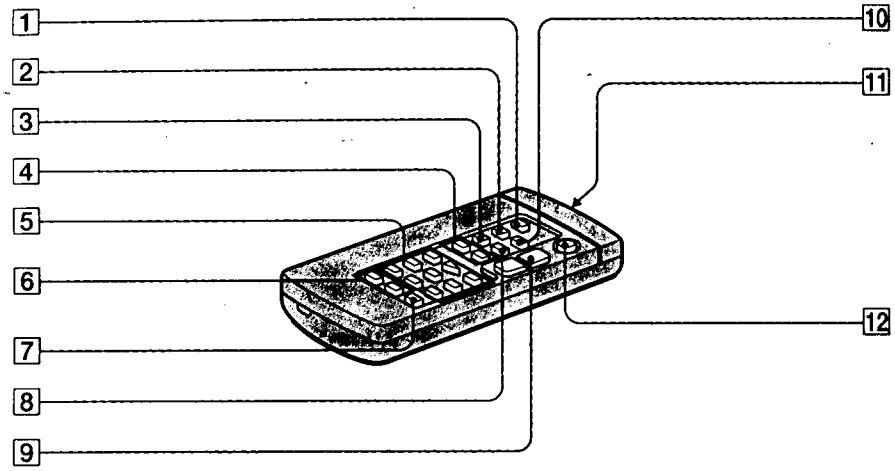
44 **LANC control jack**
stands for Local Application Control Bus System. The control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

45 **S VIDEO OUT jack** (p. 57, 68)

Identifying the parts

Remote Commander

The buttons that have the same name on the Remote Commander as on the camcorder function identically.



1 **PHOTO button** (p. 30)

2 **DISPLAY button** (p. 21)

3 **SEARCH MODE button** (p. 60, 61, 62)

4 **I◄◄/►►I buttons** (p. 60, 61, 62)

5 **Tape transport buttons** (p. 21)

6 **Recording buttons** (p. 69)

7 **AUDIO DUB button** (p. 71)

8 **DATA CODE button** (p. 66)

9 **Power zoom button** (p. 14)

10 **ZERO SET MEMORY button** (p. 65)

11 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the camcorder.

12 **START/STOP button** (p. 11)

Identifying the parts

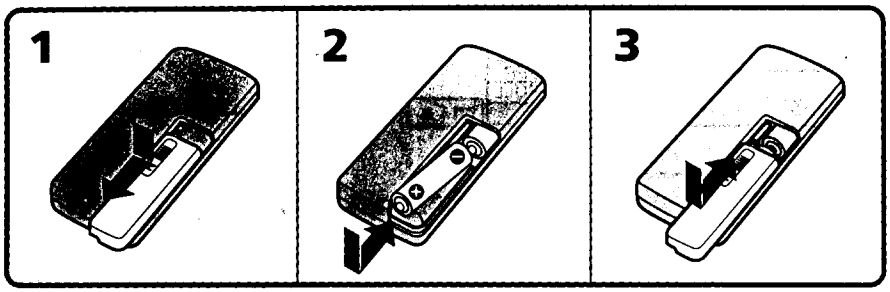
To prepare the Remote Commander

To use the Remote Commander, you must insert two size AA (R6) batteries. Use the supplied size AA (R6) batteries.

(1) Remove the battery cover from the Remote Commander.

(2) Insert both of the size AA (R6) batteries with correct polarity.

(3) Put the battery cover back onto the Remote Commander.



Note on battery life

The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage

Remove the batteries when you will not use the Remote Commander for a long time.

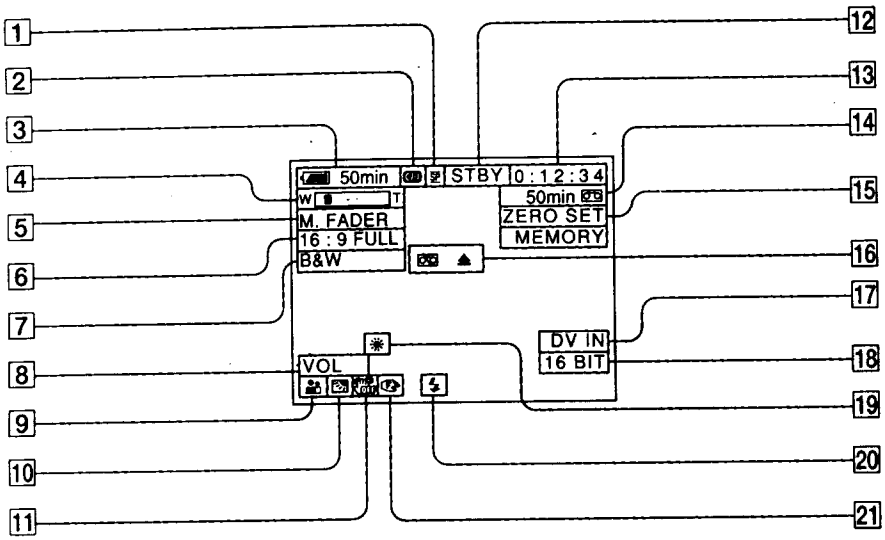
Remote control direction

Aim the Remote Commander to the remote sensor.
The operative range of the Remote Commander is about 16.4 feet (5 m) indoors.
Depending on the angle, Remote Commander may not activate the camcorder.

Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor on the camcorder and the Remote Commander.
- This camcorder works in commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

Operation indicators



1 **Recording mode indicator** (p. 13)/ **Mirror mode indicator** (p. 17)

2 **Cassette Memory indicator** (p. 5)

3 **Remaining battery indicator** (p. 77)



4 **Zoom indicator** (p. 14)/**Exposure indicator** (p. 44)

5 **FADER indicator** (p. 32)/**DIGITAL EFFECT indicator** (p. 37)

6 **16:9WIDE indicator** (p. 35)

7 **PICTURE EFFECT indicator** (p. 36)

8 **VOL (volume) indicator** (p. 21)/**Data code indicator** (p. 66)

9 **PROGRAM AE indicator** (p. 46)

10 **BACK LIGHT indicator** (p. 43)

11 **Steady Shot off indicator** (p. 49)

12 **Recording standby mode indicator** (p. 11)/**Tape transport mode indicator** (p. 21)

13 **Time code indicator** (p. 13)/ **Self-diagnosis indicator** (p. 91)/**Photo mode indicator** (p. 30)/**5SEC mode indicator** (p. 15)

14 **Remaining tape indicator** (p. 14)

15 **ZERO SET MEMORY indicator** (p. 65)

16 **Warning indicators** (p. 101)

17 **DV IN indicator** (p. 67)

18 **Audio mode indicator** (p. 72)

19 **White balance indicator** (p. 45)

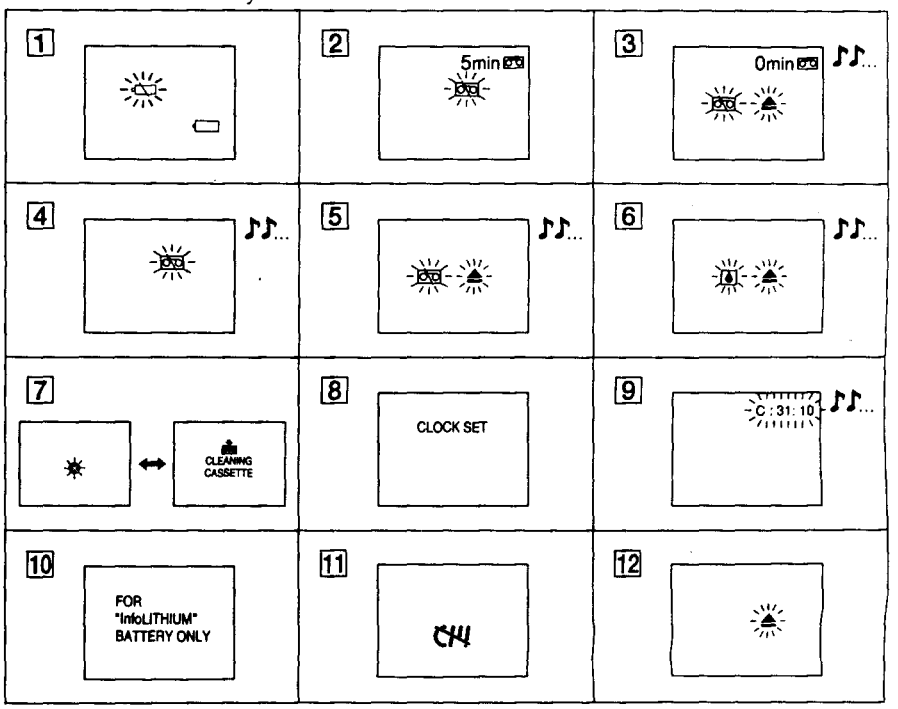
20 **Electric flash indicator** (p. 30)

21 **Manual focus indicator** (p. 48)

Warning indicators

If indicators flash or warning messages appear on the LCD screen or in the viewfinder, check the following:

♪: you can hear the melody or beep sound when BEEP is set to MELODY or NORMAL in the menu system.



1 **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.
Depending on conditions, the indicator may flash, even if there are 5 to 10 minutes remaining.

2 **The tape is near the end.**
The flashing is slow.

3 **The tape has run out.**
The flashing becomes rapid.

4 **No tape has been inserted.**

5 **The tab on the tape is out (red).**

6 **Moisture condensation has occurred.** (p. 81)

7 **The video heads may be contaminated.** (p. 82)

8 **The clock is not set.**
When this message appears though you set the date and time, the rechargeable lithium battery is discharged. Charge the lithium battery. (p. 74)

9 **The self-diagnosis function is working.**
Use the self-diagnosis function (p. 91). If the display does not disappear contact your Sony dealer or local authorized Sony service facility.

10 **The battery is not the "InfoLITHIUM" type.**

11 **The tape has no cassette memory.** (p. 5)

12 **Some other trouble has occurred.**
Eject the cassette.
If the display does not disappear, turn off the camcorder and remove the battery pack. Then install the battery pack and turn on the camcorder again. If the display still remains, contact your Sony dealer or local authorized Sony service.

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